THE EFFECTIVENESS OF EMERGENCY PREPAREDNESS ANIMAL ISSUES EDUCATION: PERCEIVED ADVANTAGES AND OBSTACLES OF ROLES PLAYED BY TEXAS AGRILIFE EXTENSION SERVICE AGENTS

By

RICK MAXWELL, B.S., M.S.

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Approved

Steve Fraze
Co-Chairperson of the Committee

Chris Boleman
Co-Chairperson of the Committee

David Lawver

Andy Vestal

Accepted

Fred Hartmeister
Dean of the Graduate School

May, 2010

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TABLE OF CONTENTS

ABSTRACT

As Extension begins to develop educational program delivery strategies for Emergency Preparedness and Management education, the major challenge will be to establish a culture among county agriculture and natural resources (ANR) Extension agents to integrate this educational programming into ongoing programming to ensure added value to this innovation and its unit of adoption. The attitudes and perceptions of these ANR agents in overall programming efforts will be extremely important for adoption and further dissemination of Emergency Preparedness and Management education to all clientele; therefore, the purpose of this study was to determine what Extension ANR agents perceived as advantages and obstacles associated with the organization and implementation of Emergency Preparedness and Management education and the necessity for establishing local animal issues committees.

The study population was Texas AgriLife Extension Service ANR agents. The agents were from both rural and urban counties, in various stages in their careers and various stages of the organization, facilitation and implementation of Emergency Preparedness and Management education and animal issues committee establishment. An online instrument was developed based on a review of related literature. The instrument had 19 total question sets pertaining to the 4 objectives of the study and included matrix, multiple choice and yes/no questions. Questions to obtain demographic information (gender, age, Extension affiliation, years of employment with Extension, and county size) were also asked.

Results indicated ANR agents felt Extension should be involved in the organization, planning and implementation of educational efforts in Emergency Preparedness and Management and also the establishment and maintenance of Animal Issues Committees. ANR agents indicated Extension's best approach would be to help identify innovators, adopters and the resources needed for Emergency Preparedness and Management and Animal Issues Committees. The success or failure of educational programming for Emergency Management depends on the help or assistance that is provided by the key stakeholders and agencies in counties. From this study, it is apparent local stakeholder and agency involvement has been an advantage and obstacle for Texas AgriLife Extension ANR agents in the state of Texas.

LIST OF TABLES

CHAPTER I

INTRODUCTION

Background

The past few years have brought several natural disasters to the United States and especially the southern states. Hurricanes Katrina and Rita brought massive devastation to the gulf coast region, especially in the states of Louisiana, Mississippi, Alabama, and Texas. At least 1,836 people lost their lives in hurricane Katrina and in the subsequent floods, making it the deadliest U.S. hurricane since the 1928 Okeechobee hurricane (National Hurricane Center, 2007). The storm was responsible for $81.2 billion in damage, making it the most expensive natural disaster in U.S. history. The Texas Gulf Coast was hit hard during the summer and fall of 2008 with hurricanes Dolly and Ike, again causing massive destruction along the Texas Gulf Coast. Hurricane Ike was especially devastating to livestock, crops and pasture along the upper Texas Gulf Coast region near Beaumont, Texas with more than 20,000 head of livestock destroyed and another 20,000 displaced.

Additionally during this time frame, tornadoes in this region also brought destruction to many small rural areas as well as in urban and suburban areas of larger cities. In 2005-2006, severe drought in Texas and Oklahoma resulted in wild fires that destroyed thousands of acres of pasture and cropland as well as homes and businesses in rural areas. This same area was affected by drought in 2008 and early 2009. Even where no fires occurred, pastures, crops and drinking water supplies for humans and livestock

were depleted because of severe drought conditions, regardless of whether a fire occurred or not. In between the drought years, 2007 brought floods to this same region causing home damage and erosion to the drought depleted pasture and croplands. Due to the numerous disaster occurrences during this time span, the need existed for emergency preparedness protocol and education to insure plans were in place to secure timely responses in the protection and care of the well being of humans, livestock, and pets in the event of a natural or manmade disaster.

Emergency preparedness is not only needed for natural disasters. The occurrence of September 11, 2001 introduced the aspect of bio-terrorism. On March 1, 2003, the Federal Emergency Management Agency (FEMA) became part of the U.S. Department of Homeland Security (DHS). FEMA's mission was and is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards (Federal Emergency Management Agency, 2010).

Foreign animal diseases are a significant possibility as a tool used by terrorist groups on the United States to deplete the nation's agricultural production. Such animal diseases as "Foot and Mouth Disease" and "Anthrax" could be initiated by these terrorist groups. With this in mind, bio-terrorism becomes a very important part in the emergency preparedness education design.

Many states, including Texas, have designed and started implementation of an Emergency Preparedness protocol in the event of a natural disaster or act of bio-terrorism In 2005, Texas AgriLife Extension Service was designated by the Texas Governor's

Division of Emergency Management to initiative the formation of county animal issues committees to diffuse Emergency Preparedness Awareness Education concerning animal issues to each respective county in the state.

Purpose of the Study

The diffusion of the innovation of Emergency Preparedness education for animal-related issues is crucial to all counties, not only in Texas but throughout the nation. With the possibilities for the occurrence of natural and /or manmade disasters, the possibility of agricultural bio-terrorism and the vast array of agriculture in the state of Texas and other states; Extension educators are, and will continue to be, very important for the organizing, implementing, evaluating, interpreting and diffusion of vital educational programs. These Extension educator's attitudes and perceptions of these educators toward the overall programming efforts are extremely important for adoption and further dissemination of Emergency Preparedness and Management education to all clientele. Therefore, the purpose of this study was to determine what Extension educators in the state of Texas perceived as advantages and obstacles associated with the organization, facilitation and implementation of Emergency Preparedness Animal Issues education and their role in the facilitation of the formation of county animal issues committees. The study also examined educational methodologies, strategies and collaborative efforts with other organizations for information dissemination.

Objectives

The objectives of this study were to determine; what processes have worked well in the diffusion of Emergency Preparedness Animal Issues education by Texas AgriLife

Extension Service agriculture/natural resources agents to residents of both rural and urban counties and counties that have been directly, indirectly or not affected at all by disasters since the onset of Texas AgriLife Extension's role in the dissemination of Emergency Preparedness Animal Issues education and the formation of County Animal Issues Committees. The results of this study will aid other states and Extension Services in the development and implementation of their Emergency Preparedness Animal Issues education. To accomplish the purpose of this study, four objectives were identified:

1. Determine the perceived advantages for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming for Emergency Preparedness.
2. Determine the perceived obstacles for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming for Emergency Preparedness Animal Issues.
3. Determine information dissemination methods or strategies which are perceived by Texas AgriLife Extension Service ANR agents as being the most effective and efficient.
4. Determine the perceptions of Texas AgriLife Extension Service ANR agents of the best organizational strategies for collaborations with other agencies, groups or individuals to assist with the diffusion of Emergency Preparedness Animal Issues Awareness education.

Significance of the Problem

Historically, the Extension Service in each state has responded to the problems and crises of communities, from local depressions and regional droughts to more nationwide cases such as the Great Depression and world wars (Bosch, 2004; Cartwright, Case, Gallagher, & Hathaway, 2002). Extension's primary role in many former crises was to provide reliable information delivered by various forms of communication media (Cartwright et al., 2002). The history of Extension is about helping people by providing objective information. The challenge for Extension is to provide, through its programs, information to help individuals and communities. Changes in economics, demographics, technology, and the environment challenge Extension faculty to provide information that is useful to a changing audience, with changing technology, in a changing world (Cartwright, Case, Gallagher, & Hathaway, 2002). Information dissemination is a core principle of Extension (Orr, 2003). If information is to be used it must be disseminated in a way that best facilitates its use by the targeted audience. However, information is delivered in a multitude of methods. The challenge is to determine which method is most appropriate to the targeted (Cartmell, Orr, & Keleman, 2006).

Knowing where to look for information is only half the battle for Extension communicators; knowing where people find information is the other half (Pounds, 1985). Studies clearly show clientele preferences do exist and may be quite different depending upon the audience being served. Considering the variability among groups and indicated personal preferences, it is likely no single delivery method is suitable for everyone (Richardson, 1995).

Extension must provide information that makes a difference (Astroth, 1990). Extension provides an important linkage between farmers and researchers, and farmers have come to value the services they receive from Extension (Ekanem, Singh, Tegegne, & Akuley-Amenyenu, 2001). Today, in this information- and technology-laden world, the sharing of information becomes easier and yet more complex. New methods for dispersing information have surfaced, yet not all individuals have adapted to this new form of communication via electronic media such as DVD's and the Internet (Cartmell, Orr, & Keleman, 2006).

The challenge arises in how best to disseminate information to target populations. Not only does Extension strive to meet the needs of large-production farms, but also it seeks to fulfill the needs of small-farm landowners, non-traditional producers, and homeowners (Polson & Gastier, 2001). Consequently, Extension must seek the most effective means of reaching individuals based on their preference for receiving information (Cartmell, Orr, & Keleman, 2006).

Theoretical Framework

Rogers' diffusion of innovation theory was the primary basis for this study and Emergency Preparedness Education for animal-related issues is like any other innovation. Rogers (2003) defined an innovation as "an idea, practice, or object perceived as new by an individual or other unit of adoption" (p. 34). Diffusion theory is the study of how, why, and at what rate new ideas and technology spread through cultures. Each adopter's willingness and ability to adopt an innovation would depend on their awareness, interest, evaluation, trial, and adoption (Rogers, 2003).

As Extension begins to develop educational program delivery strategies for Emergency Preparedness education in the area of animal issues, the major challenge will be to establish a culture among county Extension educators of integrating this educational programming into ongoing programming to ensure added value of this innovation and its unit of adoption. County Extension educators could view the added responsibility of the diffusion of this innovation as an extra obstacle, fearing that the program will leave the learners with less effective learning experiences or County Extension educators could view the innovation as an advantage for the overall integrity of Extension and its collaborators. Campbell (1995) notes that "higher education, including Extension education, faces the challenge of expanding the reach, quality, and effectiveness of instruction within the context of shrinking resources as well as organizing itself to serve students, Extension clientele, regardless of where they reside" (p. 73). As Extension faces the challenge of diffusing the innovation of Emergency Preparedness to clientele, the attitudes and professional conduct of Extension educators in each county of every district will be crucial to the dissemination of this vital information.

Definition of Terms

The following definitions of terms are intended to acquaint the reader with the operational context in which key concepts were used in this research.

Agriculture/Natural Resources Agents An advisor employed by the government to assist people in rural areas with methods of farming. (http://www.thefreedictionary.com/agricultural+agent)

Animal Issues Committees: An animal issues committee is an integral part of our local emergency management team and is an essential asset to our community. This plan outlines the types of individuals that make up an animal issues team such as the responsibilities they would have and the situations they may encounter. (www.tahc.state.tx.us/emergency/Animal_Issues_Committees)

Anthrax: Anthrax is an acute disease caused by *Bacillus anthracis*. It affects both humans and animals. Most forms of the disease are lethal. There are effective vaccines against anthrax, and some forms of the disease respond well to antibiotic treatment. Like many other members of the genus *Bacillus*, *Bacillus anthracis* can form dormant spores that are able to survive in harsh conditions for extremely long periods of time—even decades or centuries. Such spores can be found on all continents, even Antarctica. When spores are inhaled, ingested, or come into contact with a skin lesion on a host they may reactivate and multiply rapidly. Anthrax commonly infects wild and domesticated herbivorous mammals which ingest or inhale the spores while grazing. Ingestion is thought to be the most common route by which herbivores contract anthrax. Carnivores living in the same environment may become infected by consuming infected animals. Diseased animals can spread anthrax to humans, either by direct contact (e.g. inoculation of infected blood to broken skin) or consumption of diseased animals' flesh. Anthrax spores can be produced in vitro and used as a biological weapon. Anthrax does not spread directly from one infected animal or person to another; it is spread by spores. These spores can be transported by clothing or shoes. The dead body of an animal that

died of anthrax can also be a source of anthrax spores.

(http://www.fema.gov/hazard/index.shtm)

Bio-terrorism: The U.S. public health system and primary healthcare providers must be prepared to address various biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they

- can be easily disseminated or transmitted from person to person;
- result in high mortality rates and have the potential for major public health impact;
- might cause public panic and social disruption; and
- require special action for public health preparedness (Centers for Disease Control and Prevention, 2009).

(http://www.bt.cdc.gov/agent/agentlist-category.asp)

Causal-Comparative Research: Investigators attempt to determine the cause or consequences of differences that exist between or among groups of individuals. As a result, it is sometimes viewed, along with correlation research, as a form of associational research since both describe conditions that already exist. (Fraenkel & Wallen, 2006)

Department of Homeland Security: The Department of Homeland Security has a vital mission: to secure the nation from the many threats we face. This requires the dedication of more than 230,000 employees in jobs that range from aviation and border security to emergency response, from cybersecurity analyst to chemical facility inspector.

Our duties are wide-ranging, but our goal is clear – keeping America safe (Department of Homeland Security, 2009). http://www.dhs.gov/xabout/

Diffusion: The spread of cultural elements from one area or group of people to others by contact (Merriam-Webster Dictionary Online, 2009). (http://www.merriam-webster.com/dictionary)

Dissemination: Aa scattering or spreading abroad, as of ideas, beliefs, etc. To disperse throughout (Merriam-Webster Dictionary Online, 2009) (http://www.merriam-webster.com/dictionary)

Emergency Preparedness and Management: Threats to livestock production include natural disasters, disease outbreaks, agro-terrorism, and other emergencies. Proper animal agro-security and emergency management reduces the effects of these incidents (Extension Disaster Emergency Network, 2009). (http://eden.lsu.edu/EDENCourses/AnimalAgrosecurity)

The National Incident Management System (NIMS) is an emergency response system that is designed to improve preparation, coordination, and incident management in the event of a crisis. The system is designed to coordinate emergency response teams in the federal, state, and local agency levels (National Incident Management System, 2010). (http://www.nimsonline.com/?s=Emergency+Preparedness+definition)

Federal Emergency Management Agency: On March 1, 2003, the Federal Emergency Management Agency (FEMA) became part of the U.S. Department of Homeland Security (DHS). FEMA's mission was and is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our

capability to prepare for, protect against, respond to, recover from, and mitigate all hazards (Federal Emergency Management Agency, 2010)..
(http://www.fema.gov/about/index.shtm)

Foot and Mouth Disease: FMD or hoof-and-mouth disease (*Aphtae epizooticae*) is a highly contagious and sometimes fatal viral disease of cloven-hoofed animals, including domestic animals such as cattle, water buffalo, sheep, goats and pigs, as well as antelope, bison and other wild bovids, and deer. It is caused by foot-and-mouth disease virus.

Just as humans may spread the disease by carrying the germs on their clothes and body, animals that are not susceptible to the disease may still aid in spreading it. Humans are very rarely affected. Foot-and-mouth disease virus (FMDV) is a picornavirus, the prototypic member of the Aphthovirus genus in the Picornaviridae family. It is a highly variable and transmissible virus (Federal Emergency Management Association, 2010).
(http://www.fema.gov/hazard/index.shtm)

Innovation: The introduction of something new, a new idea, method or device (Merriam-Webster Dictionary Online, 2010).
(http://www.merriam-webster.com/dictionary)

Leadership Advisory Boards: The Leadership Advisory Board (LAB) is designed to be advisory in nature. The LAB is responsible for the "big picture" of the county program. Specifically, their role is to provide long term vision for the county program, serve as advocates for the county program by assisting with interpretation of the program throughout the county, and provide support to develop resources for the county program.

(http://texasvolunteer.tamu.edu/LABmaterial.htm)

Natural Disasters: Natural disasters are the result of a natural hazard that comes in contact with a significant population of humans. Although many natural hazards occur all throughout the world, they are not considered a natural disaster until they affect a place that is inhabited by humans (National Incident Management System, 2010). (http://www.nimsonline.com/)

Natural Resources and Conservation Service: Since 1935, the Natural Resources Conservation Service (originally called the Soil Conservation Service) has provided leadership in a partnership effort to help America's private land owners and managers conserve their soil, water, and other natural resources. NRCS employees provide technical assistance based on sound science and suited to a customer's specific needs. NRCS provides financial assistance for many conservation activities. Participation in NRCS programs is voluntary (USDA Natural Resources and Conservation Service, 2009). http://www.nrcs.usda.gov/about/

Texas AgriLife Extension Service: Established in 1914 after the passing of the Smith-Lever Act and in conjunction with Texas A&M University. Originally named Texas Agricultural Extension Service, the name Texas AgriLife Extension Service was adopted on January 1, 2008. Working hand-in-hand with Texas A&M System partners, the state legislature, and the communities it serves, the mission of the Texas AgriLife Extension Service is to serve Texans through community-based education (Texas AgriLife Extension Service, 2009). (http://texasextension.tamu.edu/about/index.php)

Texas Animal Health Commission: The Texas Animal Health Commission (TAHC) was founded in 1893 with a mission to address the Texas fever tick problem. Today, TAHC works to protect the health of all Texas livestock, including: cattle, swine, poultry, sheep, goats, equine family animals, and exotic livestock. TAHC also works to keep pests from reoccurring as major livestock health hazards. Ultimately, the TAHC mission and role is the assurance of marketability and mobility of Texas livestock. TAHC works to sustain and continue to make a vital contribution to a wholesome and abundant supply of meat, eggs, and dairy products at affordable costs. (http://www.tahc.state.tx.us/agency/)

Texas Commission on Environmental Quality: The Texas Commission on Environmental Quality (TCEQ) is the environmental agency for the state. The TCEQ has approximately 2,980 employees, 16 regional offices, and a $539.1 million operating budget for the 2010 fiscal year (including both baseline and contingency appropriations). The Texas Commission on Environmental Quality strives to protect our state's human and natural resources consistent with sustainable economic development. The goal is clean air, clean water, and the safe management of waste (Texas Commission on Environmental Quality, 2009). (http://www.tceq.state.tx.us/about)

Texas Department of Agriculture: The Texas Department of Agriculture (TDA) is a state agency established by the Texas Legislature in 1907. The commissioner of agriculture, who is elected in the general election every four years and leads the agency. The mission statement of the Texas Department of Agriculture is: Partner with all Texans to make Texas the nation's leader in agriculture, fortify our economy, empower

rural communities, promote healthy lifestyles, and cultivate winning strategies for rural, suburban and urban Texas through exceptional service and the common threads of agriculture in our daily lives. TDA is a diversified state agency that provides a value-added service through our marketing and regulatory services (Texas Department of Agriculture, 2009). (http://www.agr.state.tx.us/agr/main)

Texas Department of Public Safety: The Texas Department of Public Safety (TXDPS) is an agency of this state created to provide public safety services to those people in the state of Texas by enforcing laws, administering regulatory programs, managing records, educating the public, and managing emergencies, both directly and through interaction with other agencies (Texas Department of Public Safety, 2009). (http://www.txdps.state.tx.us/mission.htm)

Delimitations of the Study

The following were delimitations to this research study.

1. The respondents or participants in this study were Texas AgriLife Extension Agriculture/Natural Resources Agents in the twelve Extension districts in the state, which totaled a population size of 247.
2. For the purpose of this study, the definition of an Agriculture/Natural Resources (ANR) agent was defined and validated by the Texas AgriLife Extension Service from the 2009 Texas AgriLife Extension Personnel Directory.

Limitations of the Study

The following were the limitations for this research study.

1. Data were collected online utilizing an instrument in consisting of nineteen question sets. The accuracy of responses was subjected to the willingness of the individual to participate in the study and their willingness to divulge complete answers to the questions.
2. Only data received by the deadline to complete the online instrument were analyzed. The deadline was made known to all possible respondents on the fourth week that the online instrument was live. Weekly reminders to complete the instrument were sent to possible respondents with the deadline notification being sent on the final week.

Basic Assumptions

The researcher developed an extensive data collection instrument based upon a critique from a panel of experts consisting of eight Texas AgriLife Extension Service District Administrators and four Region Agriculture Program Directors. These experts received a pilot version of the data collection instrument to gather expert comments to ensure the instrument would help answer the four objectives of this study. These experts, along with the study respondents, comprised districts, regions and counties with various population levels, as well as from counties with various types of agricultural production.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this chapter was to review the literature relevant to the topic of emergency preparedness and management concerning animal issues and the education and establishment of animal issues committee by Extension. The review includes a discussion of natural disasters, bioterrorism, animal diseases, emergency preparedness and management, animal issues committees and the role of Extension in the organization, planning, implementation and education in these matters.

Natural Disasters

A natural disaster is the effect of a natural hazard such as a flood, tornado, volcano eruption, earthquake, or landslide which affects the environment, and leads to financial, environmental and/or human losses. The resulting loss depends on the capacity of the population to support or resist the disaster, and their resilience (Bankoff, Frerks, & Hilhorst, 2003). This understanding is concentrated in the formulation: "disasters occur when hazards meet vulnerability" (Wisner, Blaikie, Cannon, & Davis, 2004). A natural hazard will hence never result in a natural disaster in areas without vulnerability, for example, strong earthquakes in uninhabited areas. The term natural has consequently been disputed because the events simply are not hazards or disasters without human involvement (D. Alexander, 2002).

During this decade, the United States has had several natural hazards that have turned into natural disasters. Hurricanes, tornadoes, floods, ice storms, wild fires,

earthquakes and droughts have all occurred causing financial, environmental, and human loss. On August 28th, 2005, Hurricane Katrina hit the southern coast of the United States with devastating effect. It was reported that more than 1,800 people lost their lives, and more then $81 billion dollars in damages occurred. As a result, efforts to assist those affected by Hurricane Katrina still continue, as those affected by the terrible hurricane continue to work to regain the health and livelihood that they had before the storm (U.S. Department of Health and Human Services, 2009)

A few weeks after Katrina, another devastating hurricane hit the Gulf Coast region. Hurricane Rita was the fourth-most intense Atlantic hurricane ever recorded and the most intense tropical cyclone ever observed in the Gulf of Mexico. Rita caused $11.3 billion in damage on the U.S. Gulf Coast in September 2005 (National Hurricane Center, 2007). Rita was the seventeenth named storm, tenth hurricane, fifth major hurricane, and third Category 5 hurricane of the historic 2005 Atlantic hurricane season. Rita made landfall on September 23rd, between Sabine Pass, Texas, and Johnsons Bayou, Louisiana, as a Category 3 hurricane. It continued on through parts of southeast Texas. The storm surge caused extensive damage along the Louisiana and extreme southeastern Texas coasts and destroyed some coastal communities. The storm killed seven people directly; many others died in evacuations and from indirect effects (Knabb, Brown, & Rhome, 2007).

Hurricane Ike was the largest hurricane ever observed in the Atlantic basin (National Climatic Data Center (U.S. Department of Commerce, 2009) and the third most destructive hurricane to ever make landfall in the United States. It was the ninth named

storm, fifth hurricane and third major hurricane of the 2008 Atlantic hurricane season (U.S. National Hurricane Center, 2009) (Berg, 2009). It was a Cape Verde-type hurricane, as it started as a tropical disturbance near Africa at the end of August. On September 1, 2008, it became a tropical storm west of the Cape Verde islands (Reuters, 2008) (DiSavino, Scott, 2008). By the early morning hours of September 4, Ike was a Category 4 hurricane, with maximum sustained winds of 145 mph (230 km/h) and a pressure of 935 mbar, mading it the most intense Atlantic storm of 2008 (Leland Tribune, 2008). Ike passed over the Turks and Caicos Islands as a Category 4, with wind speed of 135 mph on September 7. Moving west along Cuba, it made two landfalls as a Category 4 hurricane on September 7th and a Category 1 hurricane on September 9th . Ike made its final landfall over Galveston, Texas as a strong Category 2 hurricane, with Category 5 equivalent storm surge, on September 13, 2008 at 2:10 a.m. CDT. Hurricane-force winds extended 120 miles from the center.

Ike was blamed for at least 195 deaths. Of these, 74 were in Haiti, which was already trying to recover from the impact of three storms earlier that year: Fay, Gustav, and Hanna. In the United States, 112 people were killed, and over 300 are still missing (Berg, 2009). Due to its immense size, Ike caused devastation from the Louisiana coastline all the way to the Kennedy County, Texas region near Corpus Christi, Texas. In addition, Ike caused flooding and significant damage along the Mississippi coastline. Damages from Ike in US coastal and inland areas are estimated at $24 billion (2008 USD), with additional damages of $7.3 billion in Cuba, $200 million in the Bahamas, and $500 million in the Turks and Caicos, amounting to a total of $32 billion in

damages. Ike was the third costliest Atlantic hurricane of all time, behind Hurricane Andrew of 1992 and Hurricane Katrina of 2005, (Berg, 2009). Hurricane Ike also resulted in the largest evacuation of Texans in that state's history, and became the largest search and rescue operation in U.S. history, (Hurricane Recovery Network, 2008).

Hurricanes were not the only natural disasters to have occurred in the United States in the last decade. A 2009 tornado outbreak affected portions of the South Central United States on February 10, as well as sections of the Northeastern United States, on February 11. During the two-day period, 15 tornadoes touched down in seven different states. Oklahoma was struck by six tornadoes, the most of any state. The first day of the outbreak produced the most tornadoes; the second brought mainly high wind damage and rain or snow in most of the Northeastern United States. The most destructive of the weather events, an EF4 tornado now called the Lone Grove Tornado, travelled for nearly an hour through four counties in Oklahoma during the evening of February 10. Eight people died and 46 others were injured; it destroyed 114 residences in Lone Grove alone. The Lone Grove tornado was the deadliest to hit Oklahoma since May 3, 1999 and the strongest tornado during the month of February in Oklahoma since 1950 (National Climatic Data Center, 2009).

The 2009 California wildfires burned more than 336,020 acres of land and destroying hundreds of structures and killing two people. Wildfires had occurred until late November due to red flag warnings (Los Angeles Times November 24, 2009). Although fires burned many different regions of California in August, the month was especially notable for several very large fires which burned in Southern California,

despite being outside of the normal fire season for that region. A total of 63 wildfires were started during this time span (California Department of Forestry and Fire Protection, (2009).

These are only a few of the many devastating natural disasters that have occurred over this decade in the United States. These disasters have not only caused human property and life loss, but they have also been devastating to agriculture in the United States. Billions of dollars have been lost in crops, pastures, water sources, equipment and livestock. Just from hurricane Ike alone, the livestock and poultry losses totaled over 20,000 head and another 20,000 displaced. These facts signify the importance of education concerning the knowledge and skills needed for emergency preparedness and management for agriculture before, during and after a natural disaster.

Bioterrorism

The U.S. public health system and primary healthcare providers must be prepared to address various biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they

- can be easily disseminated or transmitted from person to person;
- result in high mortality rates and have the potential for major public health impact;
- might cause public panic and social disruption; and
- require special action for public health preparedness (Centers for Disease Control and Prevention, 2009).

The most likely biological toxins terrorists might adopt are anthrax, salmonella, e. coli, hoof-and-mouth disease, the plague, smallpox, botulism, and tularemia. Of these, anthrax and hoof and mouth disease are the most likely to devastate our nations livestock supply.

Anthrax is an acute disease caused by *Bacillus anthracis*. It affects both humans and animals. Most forms of the disease are lethal. There are effective vaccines against anthrax, and some forms of the disease respond well to antibiotic treatment. Like many other members of the genus *Bacillus*, *Bacillus anthracis* can form dormant spores that are able to survive in harsh conditions for extremely long periods of time—even decades or centuries. Such spores can be found on all continents, even Antarctica (Hudson, Daniel, & Morgan, 2006). When spores are inhaled, ingested, or come into contact with a skin lesion on a host they may reactivate and multiply rapidly. Anthrax commonly infects wild and domesticated herbivorous mammals which ingest or inhale the spores while grazing. Ingestion is thought to be the most common route by which herbivores contract anthrax. Carnivores living in the same environment may become infected by consuming infected animals. Diseased animals can spread anthrax to humans, either by direct contact, inoculation of infected blood to broken skin, or consumption of diseased animal's flesh. Anthrax spores can be produced in vitro and used as a biological weapon. Anthrax does not spread directly from one infected animal or person to another; it is spread by spores. These spores can be transported by clothing or shoes.

Foot-and-mouth disease (*Aphtae epizooticae*) is a highly contagious and sometimes fatal viral disease of cloven-hoofed animals, including domestic animals such

as cattle, water buffalo, sheep, goats and pigs, as well as antelope, bison and other wild bovids, and deer. It is caused by foot-and-mouth disease virus.

In addition, hedgehogs and elephants are susceptible to the disease. The llama and alpaca may develop mild symptoms but are resistant to the disease and will not pass it on to others of the same species. In laboratory experiments, mice and rats and chickens have been successfully infected by artificial means, but it is not believed that they would contract the disease under natural conditions, (Canadian Food Inspection Agency, 2009)

Just as humans may spread the disease by carrying the germs on their clothes and body, animals that are not susceptible to the disease may still aid in spreading. This was the case in Canada in 1952 when an outbreak flared up again after dogs had carried off bones from dead animals, (Canadian Food Inspection Agency , 2009). Wolves are thought to play a similar role in the former Soviet Union, (Graves, 2007).

Humans are very rarely affected by the disease virus which is a picornavirus, the prototypic member of the Aphthovirus genus in the Picornaviridae family. It is a highly variable and transmissible virus, (Martinez-Salas, Sobrino, 2008).

Botulism is another biological agent terrorists might consider. Botulism is a muscle-paralyzing disease caused by a toxin made by a bacterium called *Clostridium botulinum*. There are three main kinds of botulism:

- Food borne botulism occurs when a person ingests pre-formed toxin that leads to illness within a few hours to days. Food borne botulism is a public health emergency because the contaminated food may still be available to other persons besides the patient.

- Infant botulism occurs in a small number of susceptible infants each year who harbor *C. botulinum* in their intestinal tract.
- Wound botulism occurs when wounds are infected with *C. botulinum* that secretes the toxin.

With food borne botulism, symptoms begin within 6 hours to 10 days, most commonly between 12 and 36 hours, after eating food that contains the toxin. Symptoms of botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness that moves down the body, usually affecting the shoulders first, then the upper arms, lower arms, thighs, calves, etc. Paralysis of breathing muscles can cause a person to stop breathing and die, unless assistance with breathing (mechanical ventilation) is provided. Botulism is not spread from one person to another. Food borne botulism can occur in all age groups, (Center for Disease Control and Prevention, 2009).

Plague is a disease caused by *Yersinia pestis* (*Y. pestis*), a bacterium found in rodents and their fleas in many areas around the world. Yersinia pestis used in an aerosol attack could cause cases of the pneumonic form of plague. One to six days after becoming infected with the bacteria, people would develop pneumonic plague. Once people have the disease, the bacteria can spread to others who have close contact with them. Because of the delay between being exposed to the bacteria and becoming sick, people could travel over a large area before becoming contagious and possibly infecting others. Controlling the disease would then be more difficult. A bio-weapon carrying *Y. pestis* is possible because the bacterium occurs in nature and could be isolated and grown

in quantity in a laboratory. Even so, manufacturing an effective weapon using *Y. pestis* would require advanced knowledge and technology (Centers for Disease Control and Prevention, 2009).

Smallpox is a serious, contagious, and sometimes fatal infectious disease. There is no specific treatment for smallpox disease, and the only prevention is vaccination. The *pox* part of *smallpox* is derived from the Latin word for "spotted" and refers to the raised bumps that appear on the face and body of an infected person.

There are two clinical forms of smallpox. Variola major is the severe and most common form of smallpox, with a more extensive rash and higher fever. There are four types of variola major smallpox: ordinary (the most frequent type, accounting for 90% or more of cases); modified (mild and occurring in previously vaccinated persons); flat; and hemorrhagic (both rare and very severe). Historically, variola major has an overall fatality rate of about 30%; however, flat and hemorrhagic smallpox usually are fatal. Variola minor is a less common presentation of smallpox, and a much less severe disease, with death rates historically of 1% or less.

Smallpox outbreaks have occurred from time to time for thousands of years, but the disease is now eradicated after a successful worldwide vaccination program. The last case of smallpox in the United States was in 1949. The last naturally occurring case in the world was in Somalia in 1977. After the disease was eliminated from the world, routine vaccination against smallpox among the general public was stopped because it was no longer necessary for prevention, (Center for Disease Control and Prevention, 2009)

Tularemia is a potentially serious illness that occurs naturally in the United States. It is caused by the bacterium *Francisella tularensis* found in animals, especially rodents, rabbits, and hares.

Symptoms of tularemia could include:

- sudden fever
- chills
- headaches
- diarrhea
- muscle aches
- joint pain
- dry cough
- progressive weakness

People can also catch pneumonia and develop chest pain, bloody sputum and can have trouble breathing and even sometimes stop breathing. Other symptoms of tularemia depend on how a person was exposed to the tularemia bacteria. These symptoms can include ulcers on the skin or mouth, swollen and painful lymph glands, swollen and painful eyes, and a sore throat.

People can get tularemia many different ways:

- being bitten by an infected tick, deerfly or other insect
- handling infected animal carcasses
- eating or drinking contaminated food or water
- breathing in the bacteria, *F. tularensis*

Tularemia is not known to be spread from person to person. People who have tularemia do not need to be isolated. People who have been exposed to the tularemia bacteria should be treated as soon as possible. The disease can be fatal if it is not treated with the right antibiotics, (Center for Disease Control and Prevention, Accessed, 2009).

These are only a few, but the most likely, of the biological agents terrorists could utilize in the case of a bioterrorism attack. It is essential that education concerning the potential devastation to both humans and animals is made known to the American public and how we can prepare to prevent these happenings and respond in the case that they do occur at some point in time.

Foreign and Emerging Animal Diseases

Foreign animal disease is defined as one that occurs in other parts of the world, but not yet in the United States, whereas an emerging animal disease is one that is a new disease or a new form of an old disease endemic to the U.S. and is increasing in prevalence (Faries & Dement 2005). Dr. Faries (2005) also stated, "The potential for a major foreign animal disease to occur in the U.S. is a serious threat. In other countries such diseases have caused tremendous economic losses to the livestock industry and had devastating sociological and economic effects on communities".

Emergency management for foreign animal diseases is also preparedness for bioterrorism against human populations since biological warfare agents or pathogens are commonly contagious to animals, such as anthrax, plague and tularemia. A bioterrorist attack on human populations in the U.S. will likely be realized by livestock producers, county Extension agents and veterinarians with evidence of unusual sickness and death in large numbers of animals before it is determined to be involving large numbers of people by the medical profession (Faries & Dement, 2005).

Foot and Mouth disease is the most highly contagious disease of livestock, and its presence will be devastating to agriculture and the general economy of our nation.

Susceptible livestock and wildlife are cattle, sheep, goats, domestic and feral swine, deer and llamas. Although it is not contagious to people, its devastation will destroy human lives emotionally, sociologically and economically.

Once the disease is recognized on a livestock premise, the impacts of the potential rapid spread of the outbreak to susceptible livestock and wildlife will be "big and bad". The virus can spread by aerosol means in the wind, by mechanical means on people, vehicles and animals and by biological means with movement of infected or diseased livestock and uncooked or undercooked meat products.

Livestock movement restrictions statewide will be declared, quarantines will be established and fighting the disease will be started. Any delays in action to stop the spread of the virus could be costly for livestock producers. To stop the outbreak, infected and exposed animals must be slaughtered immediately and properly disposed, either by burning or deep burial. Due to the delayed response to the disease outbreak in February 2001 in Great Britain, more than 6 million head of livestock on 9,662 farms were slaughtered which brought the cost of the outbreak well over $4 billion (Faries & Dement, 2005)

Foot and Mouth disease and Anthrax would be devastating to our nation’s livestock if introduced, but there are other diseases that once prevailed in the U.S. that have virtually been eradicated. If they were to be reintroduced, they could also impose a tremendous financial lost to our nation’s livestock producers. The diseases are brucellosis and bovine tuberculosis.

The bacterium *Brucella abortus* is the principal cause of brucellosis in cattle. The bacteria are shed from an infected animal at or around the time of calving or abortion. Once exposed, the likelihood of an animal becoming infected is variable, depending on age, pregnancy status, and other intrinsic factors of the animal, as well as the amount of bacteria to which the animal was exposed, (Hamilton & Hardy, 1950). The most common clinical signs of cattle infected with *Brucella abortus* are high incidences of abortions, arthritic joints and retained after-birth. There are two main causes for spontaneous abortion in animals. The first is due to erythritol, which can promote infections in the fetus and placenta. Second is due to the lack of anti-Brucella activity in the amniotic fluid. Males can also harbor the bacteria in their reproductive tracts, namely seminal vesicles, ampullae, testicles, and epididymides (Hamilton & Hardy, 1950).

Dairy herds in the USA are tested at least once a year with the Brucella Milk Ring Test, (Hamilton & Hardy, 1950). Cows that are confirmed to be infected are often killed. In the United States, veterinarians are required to vaccinate all young stock, thereby further reducing the chance of zoonotic transmission. This vaccination is usually referred to as a "calfhood" vaccination. Most cattle receive a tattoo in their ear serving as proof of their vaccination status. This tattoo also includes the last digit of the year they were born, (Vermont Beef Producers, 2009)

Canada declared their cattle herd brucellosis-free on September 19, 1985. Brucellosis ring testing of milk and cream, as well as testing of slaughter cattle, ended April 1, 1999. Monitoring continues through auction market testing, standard disease

reporting mechanisms, and testing of cattle being qualified for export to countries other than the USA, (Canadian Food Inspection Agency, 2007).

The first state–federal cooperative efforts towards eradication of brucellosis caused by *Brucella abortus* in the U.S. began in 1934. Wild bison and elk in the Greater Yellowstone area are the last remaining reservoir of *Brucella abortus* in the U.S. The recent transmission of brucellosis from elk to cattle in Idaho and Wyoming illustrates how brucellosis in wildlife in the Greater Yellowstone area may negatively affect cattle. Eliminating brucellosis from this area is a challenge, because these animals are on public land and there are many viewpoints involved in the management of these animals (United States Department of Agriculture, Animal and Plant Health Inspection Service, 2010).

Tuberculosis (TB) is a contagious disease of both animals and humans. It is caused by three specific types of bacteria that are part of the Mycobacterium group: Mycobacterium bovis, M. avium, and M. tuberculosis. Bovine TB, caused by M. bovis, can be transmitted from livestock to humans and other animals. No other TB organism has as great a host range as bovine TB, which can infect all warm blooded vertebrates. M. avium can affect all species of birds, as well as hogs and cattle. M. tuberculosis primarily affects humans but can also be transmitted to hogs, cattle, and dogs. Bovine TB has affected animal and human health since antiquity. Once the most prevalent infectious disease of cattle and swine in the United States, bovine TB caused more losses among U.S. farm animals in the early part of the 20th century than all other infectious diseases combined. Begun in 1917, the Cooperative State-Federal Tuberculosis Eradication Program, which is administered by the U.S. Department of Agriculture's (USDA) Animal

and Plant Health Inspection Service (APHIS), State animal health agencies, and U.S. livestock producers, has nearly eradicated bovine TB from the Nation's livestock population. This disease's presence in humans has been reduced as a result of the eradication program, advances in sanitation and hygiene, the discovery of effective drugs, and pasteurization of milk, (United States Department of Agriculture, Animal and Plant Health Inspection Service, 2010).

TB was again a tremendous problem for the large dairy herds in El Paso, Texas during the late 1990's causing the depopulation of thousands of head of dairy cattle. This was a tremendous economic tragedy for that region with the depopulation of several infected dairy herds. Texas received class free status for bovine TB in 2005, but that status was downgraded again in 2007 when more infected dairy animals were found again in the El Paso area. An area in South Central New Mexico continues also to have a problem with bovine TB in dairy herds as well dairy herds in the state of Minnesota.

Foreign and emerging livestock diseases are a continual threat to our nation's livestock industry. Dr. Floron Fairies (2005) stated that, "The first line of defense against bio-security threats from foreign and emerging livestock diseases will be livestock owners. They must keep a sharp eye on livestock and promptly report any unusual signs of disease". Early detection and reporting could prevent the loss of billions of dollars for our livestock communities.

In 2004 the Department of Homeland Security established the National Center for Foreign Animal and Zoonotic Disease Defense (FAZD Center). The Center is a consortium of four academic institutions – The Texas A&M University System, the

University of California-Davis, the University of Texas Medical Branch and the University of Southern California. The Center develops research, education, training and communications programs to address the prevention and detection of foreign and zoonotic diseases, (Faries & Dement, 2005).

Emergency Preparedness and Management

Emergency Preparedness and Management involves the threats to livestock production include natural disasters, disease outbreaks, agro-terrorism, and other emergencies. Proper animal agro-security and emergency management reduces the effects of these incidents (Extension Disaster Emergency Network, 2009). The National Incident Management System (NIMS) is an emergency response system that was designed to improve preparation, coordination, and incident management in the event of a crisis. The system is designed to coordinate emergency response teams in the federal, state, and local agency levels (National Incident Management System, 2010)

The Patriot Act was passed in 2001 followed by the creation of the Department of Homeland Security to protect our nation's energy production, transmission and distribution, telecommunications, nuclear materials, information systems, transportation, airports and livestock, agriculture, water and food systems. Homeland Security Presidential directives are issued by the President on matters pertaining to defense of agriculture and food to develop early warning, mitigate vulnerabilities, enhance screening and enhance response and recovery in the event of a natural disaster or act of bioterrorism, (The National Strategy for Homeland Security, 2002).

Our nation has taken large steps over the past few years to ensure that we are prepared at the national, state and local levels in the case of a natural disaster, act of bio-terrorism, or introduction of a foreign or emerging animal disease. The protocol is in place, but the need to educate the public on this protocol still exists. This need is crucial to make sure we are prepared or can respond to an emergency situation.

Animal Issues Committees

The term animal issues committee was developed in the state of Texas. In September 2006, the Chief of Texas State Emergency Management sent a letter to each city and county elected official asking that each of their jurisdictions establish an Animal Issues Committee (AIC). The letter stated that every county or jurisdiction in the state of Texas would face animal issues of some kind, and the State of Texas strongly encouraged local emergency management authorities to form Animal Issues Committees (AIC's). The AIC's bring people with various types of animal expertise, both large and small animal, together so that emergency/disaster response animal issues can be addressed. The AIC can be chaired by the Emergency Management Coordinator, the Extension Agent, or any other competent animal and/or agriculturally oriented individual. The vulnerabilities and resources of the community and the organization of the Animal Issues Committee would be detailed in the Animal Issues Committee Plan, (Texas Animal Health Commission, 2006).

Since 2006, two pieces of legislation outlined mandates from both a federal and state level regarding animals during disasters. The first is the "Pets Evacuation and Transportation Standards Act of 2006" which amends the Robert T. Stafford Disaster

Relief and Emergency Assistance Act to require the Director of the Federal Emergency Management Agency (FEMA) to ensure that state and local emergency preparedness operational plans address the needs of individuals with household pets and service animals prior to, during, and following a major disaster or emergency, (Library of Congress, 2009). State and local jurisdictions must plan for pet sheltering and evacuation prior to a disaster. The second is a Texas State law, HB-88, which amends the Government Code requiring the Division of Emergency Management to assist political subdivisions in developing plans for the humane evacuation, transport, and temporary sheltering of service animals and household pets in a disaster, (State of Texas, 2009). The Texas Governor's Division of Emergency Management, coordinating through the Texas Animal Health Commission, is directed to assist local jurisdictions with animal related emergency planning.

Since these mandates and the letter from the Chief Texas State Emergency Management in 2006, Texas AgriLife Extension Agriculture/Natural Resources agents have been instrumental in the organization, establishment and implementation of local county animal issues committees in many counties in the state. Many counties within the state are in various stages of this process. Some counties have established AIC that have been in existence since 2006. Many of these counties have written and annexed AIC plans into their local counties' emergency management plan. Many counties are still in the organizational process of establishing an AIC. Some counties have had no trouble at all in the process of establishing and maintaining an AIC while others have had obstacles in their way in the process. With this in mind, it is the purpose of this study to determine

why this is, what factors have made it difficult or easy for counties and Texas AgriLife Extension Agriculture/Natural Resources agents to carry out this process.

Texas AgriLife Extension

Historically, the Extension Service in each state has responded to the problems and crises of communities from local depressions and regional droughts to more nationwide cases, such as the Great Depression and world wars (Bosch, 2004; Cartwright, Case, Gallagher, & Hathaway, 2002). Extension's primary role in many former crises was to provide reliable information delivered by various forms of communication media (Cartwright et al., 2002). The history of Extension is about helping people by providing objective information. The challenge for Extension is to provide, through its programs, information necessary to help individuals and communities. Changes in economics, demographics, technology, and the environment challenge Extension faculty to provide information that is useful to a changing audience, with changing technology, in a changing world (Cartwright, Case, Gallagher, & Hathaway, 2002). Information dissemination is a core principle of Extension (Orr, 2003). If information is to be used, it must be disseminated in a way that best facilitates its use by agriculture producers. However, information is delivered in a multitude of methods, and the challenge is to determine which method is most appropriate to the targeted (Cartmell, Orr, & Keleman, 2006).

Knowing where to look for information is only half the battle for Extension communicators; knowing where people find information is the other half (Pounds, 1985). Studies clearly show clientele preferences do exist and may be quite different depending

upon the audience being served. Considering the variability among groups and indicated personal preferences, it is likely no single delivery method is suitable for everyone (Richardson, 1995).

Extension must provide information that makes a difference (Astroth, 1990). Extension provides an important linkage between farmers and researchers, and farmers have come to value the services they receive from Extension (Ekanem, Singh, Tegegne, & Akuley-Amenyenu, 2001). Today, in this information and technology laden world, the sharing of information becomes easier and yet more complex. New methods for dispersing information have surfaced, yet not all individuals have adapted to this new form of communication via electronic media such as DVD's and the Internet (Cartmell, Orr, & Keleman, 2006).

The challenge arises in how best to disseminate information to target populations. Not only does Extension strive to meet the needs of large-production farms, but also it seeks to fulfill the needs of small-farm landowners, non-traditional producers, and homeowners (Polson & Gastier, 2001). Consequently, Extension must seek the most effective means of reaching individuals based on their preference for receiving information (Cartmell, Orr, & Keleman, 2006).

As Extension begins to develop educational program delivery strategies for Emergency Preparedness education in the area of animal issues, the major challenge will be to establish a culture among county Extension educators to integrate this educational programming into ongoing programming to ensure added value to this innovation and its unit of adoption. County Extension educators could view this added responsibility of the

diffusion of this innovation as an extra obstacle fearing that the program will leave the learners with less effective learning experiences or as an advantage for the overall integrity of Extension and its collaborators. Campbell (1995) notes that "higher education, including Extension education, faces the challenge of expanding the reach, quality, and effectiveness of instruction within the context of shrinking resources as well as organizing itself to serve students, Extension clientele, regardless of where they reside" (p. 73). As Extension faces the challenge of diffusing the innovation of Emergency Preparedness to clientele, the attitudes and professional conduct of Extension educators in each county of every district will be crucial to the dissemination of this vital information.

Texas AgriLife Extension Service and its county agents, specialists and administration are and have been committed to the diffusion of emergency preparedness and management education to clientele throughout the state since 2005. The vastness and diversity of the state sometimes makes the process of educational delivery difficult. This fact has held true for the dissemination of emergency preparedness and management education and the facilitation in the organization and education of the importance of establishing a local county AIC and the development of an animal issues plan.

The State of Texas, Texas AgriLife Extension and other state agencies involved with the diffusion of emergency preparedness and management education have been very successful over the past four years. Many county AIC have been established and many animal issues plans have been developed, but there are many counties that are still in the developmental process. There have been advantages and obstacles for each county in the

state of Texas and it is therefore the intent of this study to determine those factors that might help other states that are not as far along in the diffusion of this vital innovation and process.

Summary

In the United States today, the possible occurrence of natural disasters such as hurricanes, tornados, floods, wildfires, drought and many other natural events exists. The continual threat of bioterrorism, since the occurrence of 911, is also a possibility in the U.S. These acts of bioterrorism might include the introduction of foreign or emerging animal diseases such as Foot and Mouth Disease or Anthrax.

It is crucial that our nation develop and provide the necessary education to ensure that we are prepared and can respond in a timely and correct manor as to prevent or minimize the effects of a natural disaster, act of bioterrorism, or introduction of a foreign or emerging animal disease.

The Extension Service in each state has been instrumental over the years in providing and disseminating timely education information to clientele. Extension is also known for the ability to organize, facilitate and implement crucial information in a timely fashion. Emergency preparedness and management education is an innovation that Extension, in every state in the U.S., has had involvement in the dissemination of information since the occurrence of 911.

Texas AgriLife Extension has been at the forefront in the dissemination of this vital educational information to its clientele in the state. The facilitation and organization in the establishment of local county animal issues committees and the development of

local animal issues plans to ensure that livestock and pets are addressed in the occurrence of a natural disaster, bioterrorism act, or introduction of a foreign or emerging animal disease, is another responsibility given to the agency. The dissemination process in Texas has been ongoing since 2006. There have been advantages and obstacles throughout the process. Therefore, it is the purpose of this study to determine those factors through the perceptions of Texas AgriLife Extension agents and to make those factors known with the intent of assisting other states in their own developmental process concerning emergency preparedness and management.

CHAPTER III

METHODOLOGY

Purpose of the Study

The purpose of this study was to determine what Texas AgriLife Extension Service Agriculture/Natural Resources (ANR) agents perceived as advantages and obstacles associated with the organization, facilitation and implementation of Emergency Preparedness Animal Issues education. The study sought ANR agent's perceptions as to their role in the facilitation of the formation of county animal issues committees and the development of animal issues plans. The study also examined educational methodologies, strategies and collaborative efforts with other organizations for information dissemination.

Research Objectives:

The research objectives for this study were designed to determine what processes have worked well in the diffusion of Emergency Preparedness Animal Issues education by Texas AgriLife Extension Service ANR agents. The agents were from both rural and urban counties and from counties that had been directly, indirectly or not affected at all by disasters since the onset of Texas AgriLife Extension's role in the dissemination of Emergency Preparedness Animal Issues education and the formation of County Animal Issues Committees. The results of this study will also aid other states and Extension Services in the development and implementation of their Emergency Preparedness Animal Issues education. Four objectives were determined for this study were:

1. Determine perceived advantages for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming for Emergency Preparedness?
2. Determine perceived obstacles for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming for Emergency Preparedness Animal Issues?
3. Determine information dissemination methods or strategies which are perceived by Texas AgriLife Extension Service ANR agents as being the most effective and efficient?
4. Determine perceptions of Texas AgriLife Extension Service ANR agents for the best organizational strategies for collaborations with other agencies, groups or individuals to assist with the diffusion of Emergency Preparedness Animal Issues Awareness.

Causal-Comparative Research Design

The study utilized a causal-comparative research design in which investigators attempt to determine the cause or consequences of differences that exist between or among groups of individuals. As a result, it is sometimes viewed, along with correlation research, as a form of associational research since both describe conditions that already exist. (Fraenkel & Wallen, 2006). Because both the effects and causes have already occurred and are studies in retrospect, causal-comparative research is also referred to sometimes as *ex post facto* or after the fact research. This is in contrast to an experimental study in which a researcher creates a difference between or among groups

and then compares their performance on one or more dependent variables to determine the effects of the created difference, (Fraenkel & Wallen, 2006). The group difference variable in a causal-comparative study is either a variable that cannot be manipulated or one that might have been manipulated but for one reason or another has not been.

A causal-comparative research design was selected for this study as the best possible design method to determine or answer the research objectives of the perceived advantages and obstacles in the diffusion of emergency preparedness and management education and the role of establishing and maintaining animal issues committees by Texas AgriLife Extension ANR agents. Because this research study involved Extension ANR agents working for Texas AgriLife Extension, it was important to have the permission and endorsement of Texas Extension administration prior to conducting this research. Texas AgriLife Extension's Associate Director for County Programs was contacted and the goals and procedures of this study were outlined. Administration was very supportive and allowed this study. Administration also drafted a letter explaining the importance of responding to the study that was emailed to all Texas AgriLife Extension ANR agents that would have an opportunity to respond to the survey questionnaire.

Instrumentation

For this study, an instrument appropriate for an internet survey was developed by the researcher based upon a review of related literature. The instrument had nineteen total question sets. The question sets pertained to the four objectives of the study and included double matrix needs assessment questions, multiple choice questions and yes/no questions. Questions to obtain demographical information (gender, age, Extension

affiliation, years of employment with Extension, college degree area and county size) were also asked in the questionnaire.

The online software used for the research was www.hostedware.com which had data encryption and firewall protection to protect and secure all data for the researcher. The data was transferred to the researcher only through a dead link using snag-it pictures for each section of the survey instrument. The data was transferred directly from the website host to the researcher.

A recruitment email was sent to the sample subjects and read as follows:

Texas AgriLife Extension Service ANR Agents,

A questionnaire is being used to collect data for the research dissertation topic **"**The Effectiveness of the Diffusion of Emergency Preparedness Animal Issues Education: Perceived Advantages and Obstacles of the Diffusion by Texas AgriLife Extension Service Agriculture Agents".

Thank you for taking time to answer this questionnaire concerning Emergency Preparedness Animal Issues education. The research aims to identify the perceptions of agricultural Extension agents as to their role in the development and implementation of animal issues committees and their perceptions of the role of Extension in the development and dissemination of Emergency Preparedness Animal Issues education.

The questionnaire therefore asks general questions regarding the involvement of agricultural Extension agents in the development, implementation, and dissemination of Emergency Preparedness Animal Issues.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the questionnaire at any point or skip questions if needed. It is very important to learn of your opinions concerning this topic.

Your responses will be strictly confidential and data from this research will be reported anonymously. If you have questions at any time about the questionnaire, please contact me (Rick Maxwell) by phone at (972) 548-4233 or email at ricky.maxwell@ttu.edu .

Thank you very much for your time and support. Please start the questionnaire now. It should take approximately 25 minutes. Please start the survey by clicking on the link: http://www.hostedsurvey.com/Takesurvey.asp?c=Emerge101253&rc=AgNR

For the purpose of ensuring the validity and reliability of the instrument, the questionnaire instrument was assessed for content and face validity by a panel of five experts consisting of two faculty members from the Department of Agriculture Education and Communications at Texas Tech University and three faculty members from the Department of Agriculture Education and Communications at Texas A&M University, with expertise in the study area. It was suggested by the panel of experts that the instrument be pilot tested with Extension administrators that had previously been ANR agents before advancement to administration. The instrument along with a detailed description of the study was then emailed to the four Texas AgriLife Extension Regional Agriculture Program Directors and to eight Texas AgriLife Extension District Extension Administrators that had previously been ANR agents. The administrators were asked to

complete and critique the questionnaire for content validity. The email was sent to the administrators during early October, 2009, which is a very busy time of the year for both district administrators and regional program directors in that this is the time of the year they are holding program planning conferences with the agents in their respective districts and regions. After the initial email was sent, a follow up email was sent a week later giving a total of two weeks for Texas AgriLife Extension Administrators to complete and critique the questionnaire. All 12 of the administrators responded by completing the questionnaire and offering their individual critiques of the questionnaire within the two week period. The individual critique comments were then compiled and analyzed by the researcher. The comments were also forwarded to the panel of 5 experts at Texas Tech and Texas A&M University for their comments as to whether the critique comment revisions should be made to the instrument. The panel also recommended further revisions that needed to be made to the instrument. Once these revisions were made by the researcher, the final instrument was then emailed back to the panel and to the researcher's committee for final comments before the instrument was modified for a format for the host internet website.

Data Collection

After receiving the permission to proceed with the survey from the panel and the research committee members, the researcher then modified the instrument into a format for the host internet website. Once the instrument modifications were made and reviewed by the researcher, an invitation was constructed by the researcher on the internet host website that explained the purpose of the study along with an adverse events and liability

statement that said, “The proposed research does not involve any risks beyond those encountered in everyday life and no specific liability plan is offered.

First Invitation

The first invitation with a link to the host internet site that included an individual code for each participant responding was sent by email on Monday, October 26th, 2009 from the host website along with a deadline for completion to the 247 ANR agents for Texas AgriLife Extension. During week one, 45 responded by completing the questionnaire. Three of the 247 invitations were emailed to the researcher as non-deliverable.

Second Invitation

A second invitation was sent the following Monday, November 2, 2009, seven days later, that included the link to the questionnaire with the same individual codes for the possible participants. By Friday of week two, 14 days later, 22 more participants had responded by completing the questionnaire for a total of 67 responses.

Third Invitation

On Monday, November 9, 2009, seven days later, a third email invitation was sent by the researcher to the population. The email included the initial invitation and an extended deadline for the possible respondents. By Friday of week three, an additional 21 participants had responded for a total of 88 responses.

Fourth Invitation

A fourth and final invitation was sent again by email with the initial invitation, the link to the survey and the individual participant code on Monday, November 16, 2009,

seven days later. The questionnaire was held live by the host website through the end of the week. The survey was deactivated by the researcher on Monday, November 23rd, 30 days later from the first invitation. By this time, 99 participants had responded to the questionnaire.

Data received from the questionnaire responses by the 99 participants were analyzed using frequencies, means, percentages and correlations. Descriptive statistics and Pearson Product Moment Correlation tests were also computed to describe the relationships.

Validity

There were two threats that existed in this study for internal validity. These two threats were subject characteristics and mortality.

The attitude of subjects may have posed a threat to internal validity. Subjects may not have answered all questions on the survey questionnaire for various reasons, which affected, but were unrelated to, the study. The researcher attempted to control this threat by stressing the importance of answering all questions. Some subjects may have shown bias to particular areas on the questionnaire due to their expertise and involvement in the subject area. The consensus nature of this study controlled this threat by using collective opinions or critique responses from the five member panel of experts and the pilot test and critique by the 12 Extension administrators to help eliminate or change the wording of questions that might cause this bias.

A mortality threat also existed as participants in the study consisted of Texas AgriLife Extension Agriculture/Natural Resources Agents who were very busy with their full-time positions. Furthermore, there was a span of four weeks in time the

questionnaire was live for responses which increased the risk of a mortality threat in which the ANR agents could have changed employment. The researcher attempted to control mortality by emphasizing, to the possible respondents, how important their individual contributions to the study were and the imperative nature of completing the entire questionnaire. Participants were reminded that this study could help to possibly improve Extension's approach to Emergency Preparedness and Management Education in Texas and other states.

Reliability

Reliability and validity always depend on the context in which an instrument is used. Depending on the context, an instrument may or may not yield reliable scores. If the data are unreliable, they cannot lead to valid inferences, (Fraenkel & Wallen, 2006). In this study, Cronbach's alpha, an internal consistency measure, was used to estimate the reliability of the instrument. The correlation coefficient for this study was calculated using Cronbach's alpha and found to be 0.94.

CHAPTER IV

RESULTS

Introduction

The purpose of this study was to determine what Texas AgriLife Extension Service Agriculture/Natural Resources (ANR) agents perceived as advantages and obstacles associated with the organization, facilitation and implementation of Emergency Preparedness Animal Issues education. The study sought ANR agent's perceptions of their role in the facilitation of the formation of county animal issues committees and the development of animal issues plans.

The overall objectives of this study were to determine what processes have worked well in the diffusion of Emergency Preparedness Animal Issues education by Texas AgriLife Extension Service ANR agents to residents of both rural and urban counties and counties that have been directly, indirectly or not affected at all by disasters since the onset of Texas AgriLife Extension's role in the dissemination of Emergency Preparedness Animal Issues education and the formation of County Animal Issues Committees. The results of this study will also aid other states and Extension Services in the development and implementation of their Emergency Preparedness Animal Issues education. Four objectives were determined for this study:

Texas AgriLife Extension ANR agents (N=99) responded as participants in a four week period the questionnaire was live on the host website that began on Monday, October 26, 2009 and concluded or was made inactive on Monday, November 23, 2009

(Table 4.1). The survey questionnaire instrument utilized for the study may be viewed in Appendix B.

Data were collected and analyzed at the conclusion of data collection on Monday, November 23, 2009 (Table 4.1).

Table 4.1: Description of the study participant responses, time line for each week, weekly responses, and response total at each weeks end

	Week 1	Week 2	Week 3	Week 4
Responses	45	22	21	11
Date of Invitation	October 26	November 2	November 9	November 16
Date end of invitation	November 1	November 8	November 15	November 23
Response total	45	67	88	99

Descriptive Statistics-Demographics

All twelve Texas AgriLife Extension Service Districts were represented by respondents representing the entire state of Texas (Table 4.2). All of the online questionnaire respondents were Texas AgriLife Extension Service ANR agents. Of the respondents, three were from Texas AgriLife Extension District 1 (3.0%), six from District 2 (6.0%), six from District 3 (6.0%), 16 from District 4 (16.1%), 13 from District 5 (13.1%), seven from District 6 (7.0%), seven from District 7 (7.0%), 11 from District 8 (11.1%), eight from District 9 (8.0%), 10 from District 10 (10.1%), seven from District 11 (7.0%) and five from District 12 (5.0%)(Table 4.2).

Table 4.2*: Texas AgriLife Extension Service Districts Represented (N=99)*

	Frequency	% of Total
District 1	3	3.0
District 2	6	6.0
District 3	6	6.0
District 4	16	16.1
District 5	13	13.1
District 6	7	7.0
District 7	7	7.0
District 8	11	11.1
District 9	8	8.0
District 10	10	10.1
District 11	7	7.0
District 12	5	13.1

Respondents were also asked their gender, ethnicity, age range and years of service range with Texas AgriLife Extension. Male respondents totaled 79 (94.0%) while female respondents totaled five respondents (5.9%). Eighty-four answered this question (Table 4.3).

Table 4.3*: Respondents gender* (N=83)

Gender	Frequency	% of Total
Male	79	94.0
Female	5	6.0

For ethnicity, 77 (92.7%) responded to White/Caucasian, four (4.8%) responded as Hispanic, one (1.2%) responded as multi-racial and one (1.2%) responded indicated other. Eighty-three respondents answered this question (Table 4.4)

Table 4.4: *Ethnicity of respondents* (N=83)

Ethnicity	Frequency	% of Total
African American	0	0
Hispanic American	4	4.8
Multi-racial	1	1.2
White/Caucasian	77	92.7
Asian American	0	0
Other	1	1.2

Respondents were asked their age group, with possible answer choices of 20-29, 30-39, 40-49, 50-59 and 60 years of age and over. Eleven (13.2%) answered 20-29, 31 (37.3%) answered 30-39, 27 (32.5%) answered 40-49, 13 (15.6%) answered 50-59 and one (1.2%) respondent was 60 years of age or over. Eighty-three respondents answered this question (Table 4.5).

Table 4.5*: Respondents age range group* (N=83)

Age range	Frequency	% of Total
20-29	11	13.2
30-39	31	37.3
40-49	27	32.5
50-59	13	15.6
60 or over	1	1.2

The years of service with Texas AgriLife Extension question had possible responses of 0-5, 6-10, 11-15, 16-20, 21-25 and 26 years or more. From the responses to this question, 23 (27.3%) answered 0-5, 16 (19.0%) answered 6-10, 14 (16.6%) answered 11-15, 13 (15.4%) answered 16-20, seven (8.3%) answered 21-25 and 11 (13.10%)

answered 26 or more years of service (Table 4.6). Eighty-four respondents answered this question.

Table 4.6*: Respondents years of employment range with Texas AgriLife Extension* (N=84)

Years of Employment	Frequency	% of Total
0-5	23	27.3
6-10	16	19.0
11-15	14	16.6
16-20	13	15.4
21-25	7	8.3
26 or more years	11	13.1

Animal Issues Committee Establishment and Management

Respondents to the survey questionnaire were asked questions concerning the establishment and management of Emergency Management Animal Issues Committees (AIC) in their respective counties. The first question asked how long has your county had an established AIC. The possible responses were 1) do not have one, 2) less than 1 year, 3) 1 year, 4) 2 years and 5) more than two years. From the responses to this question, 10 (10.2%) answered do not have one, 12 (22.4%) answered less than one year, 10 (10.2%) answered 1 year, 18 (18.4%) answered 2 years and 48 (49.0%) answered more than 2 years. Ninety-eight total participants responded to this question (Table 4.7).

Table 4.7: *How long has your county had an established Emergency Management Animal Issues Committee?* (N=98)

	Frequency	% of Total
Do not have one	10	10.2
Less than one year	12	12.2
1 year	10	10.2
2 years	18	18.4
More than 2 years	48	49.0

The second question concerning the establishment and management of an AIC asked respondents, "How often does your AIC meet"? The possible responses were, 1) do not have one, 2) once a year, 3) twice a year, 4) three times a year and 5) more than 3 times a year. The responses to this question were as follows, 10 (10.4%) answered do not have one, 46 (47.9%) answered once a year, 26 (27.1%) answered twice a year, six (6.3%) answered three times a year and eight (8.3%) answered more than 3 times a year. Ninety-six respondents answered this question (Table 4.8).

Table 4.8: *How often does your county's Emergency Management Animal Issues Committee meet?* (N=96)

	Frequency	% of Total
Do not have one	10	10.4
Once a year	46	47.9
Twice a year	26	27.1
Three times a year	6	6.3
More than 3 times a year	8	8.3

It was important to determine the involvement of other agencies that were instrumental in assisting with the establishment and of local AIC's. Respondents were asked, *"How many other agencies have helped you to establish an Emergency*

Management AIC?" Ninety-nine of the survey respondents answered this question. The possible responses to the question were, 1) do not have one, 2) Farm Services Agency (FSA), 3) Natural Resources and Conservation Service (NRCS), 4) Texas Department of Agriculture (TDA), 5) Texas Animal Health Commission (TAHC), 6) Homeland Security, 7) Texas Parks and Wildlife Department (TPWD), 8) University Professors (Non-Extension), 9) Fire Department/EMS, 10) Law Enforcement, 11) Texas Department of Transportation (TXDOT), 12) Local Government (Commissioners Courts) and 13) Other. Twelve respondents (12.1%) answered do not have one, 10 (10.1%) answered FSA, 14 (14.1%) answered NRCS, five (5.1%) answered TDA, 39 (39.4%) answered TAHC, seven (7.1%) answered Homeland Security, four (4.0%) answered TPWD, two (2.0%) answered University Professors (Non-Extension), 22 (22.2%) answered Fire Department/EMS, 20 (20.2%) answered Law Enforcement, none (0%) answered TXDOT, 53 (53.5%) answered Local Government (Commissioners Court) and 43 (43.4%) answered Other (Table 4.9).

Table 4.9: *Which of the agencies listed actively assisted in the establishment of your county's Emergency Management Animal Issues Committee?* (N=99)

	Frequency	% of Total
Do not have one	12	12.1
FSA	10	10.1
NRCS	14	14.1
TDA	5	5.1
TAHC	39	39.4
Homeland Security	7	7.1
TPWD	4	4.0
University Professors (Non-	2	2.0

Extension)		
Fire Department/EMS	22	22.2
Law Enforcement	20	20.2
TXDOT	0	0
Local Government	53	53.5
Other	43	43.4

The respondents could mark all agencies that applied to their respective counties in the assistance in establishing an AIC. The respondents answered from no agencies up to a total of eight agencies assisting in the development of their AIC. The frequency and percentage of the responses of 0-8 are listed in (Table 4.10).

Table 4.10*: How many of the agencies listed have help in the establishment of an AIC in your county?* (N=99)

Number of Agencies	Frequency	% of Total
0	1	1.0
1	50	50.5
2	10	10.1
3	15	15.2
4	10	10.1
5	7	7.1
6	4	4.0
7	0	0
8	2	2.0

Texas AgriLife Extension's Leadership Advisory Boards (LAB) are very important in helping Extension agents identify critical issues that the county faces both in the short and long term. Extension agents rely heavily on the input from LAB in their program planning for both short and long term. The study sought to determine the

perceptions of Texas AgriLife Extension Agriculture/Natural Resources Agents as to the LAB identification of Emergency Management Animal Issues programming for their respective county in either the short or long term.

Two yes/no answer questions were asked to determine the perceived level of importance by county LAB's. The first question asked, *"Does your LAB identify Emergency Management in its list of long term (more than 3 years) priorities for program planning?"* The second questions asked, *"Does your LAB identify Emergency Management in its list of short term (3 years or less) priorities for program planning?"* If the respondents answered yes to either or both of the questions, they were given an opportunity to state why Emergency Management was identified by their LAB as being important in short and/or long term programming.

The respondents answers to the first LAB question are as follows, 75 (75.8%) answered no, 23 (23.2%) answered yes (Table 4.11).

Table 4.11: *Does your LAB identify Emergency Management in its list of long term (more than 3 years) priorities for program planning?* (N=98)

Answer	Frequency	% of Total
No	75	75.8
Yes	23	23.2
Unanswered	1	1.0
If yes answer, then why	18	75.0

Of the respondents that answered yes to this question, 18 (75.0%) gave an answer as to why. Of these answers, one respondent stated, *"It ranks in the middle due to our counties' susceptibility to potential emergencies"*. Another respondent stated, *"It ranks first, they feel responding rapidly to an emergency is in the best interest of the*

entire community". Still yet another respondent stated, *"Emergency plans are important to our LAB because disasters can affect lots of people. Even though we rarely implement our disaster plans, safety and having others in mind is a top priority"*. All of the respondents that answered the open end question indicated their LAB ranked Emergency Management as three or higher on their list of county priorities (Table 4.12).

As to the second question concerning county LAB's ranking of Emergency Management as a priority issue short term (3 years or less), respondents answered as follows, 73 (78.5%) answered no, 20 (21.5%) answered yes (Table 4.12). Ninety-three respondents answered this question.

Table 4.12*: Does your LAB identify Emergency Management in its list of short term (3 years or less) priorities for program planning?* (N=93)

Answer	Frequency	% of Total
No	73	74.5
Yes	20	20.4
Unanswered	5	5.1
If answered yes, then why	6	37.5

Respondents that answered yes were again given the opportunity to answer why in the form of an open ended response. One of the respondents to this question answered, *"We have identified 'Patriotism to Preparedness' as a short term program planning goal, so that students will be able to understand Emergency Preparedness"*. Another respondent stated, *"Same as long term. We will probably not get hit again in the short term by another hurricane. It is more important to have a long term plan in place so as to stay relevant"*. Of the 20 respondents answering yes to the short term yes/no question, six (37.5%) responded as to why.

County Stakeholders

The questionnaire then asked respondents their perceptions of the perceived level of importance and the level of perceived need of Emergency Management Animal Issues by certain identified county stakeholders. This was presented on the questionnaire as a double matrix question for each identified stakeholder with the level of perceived importance responses being 1) No importance, 2) Low importance, 3) Moderate importance, 4) High importance and 5) Not applicable. The perceived need responses were, 1) No need, 2) Low need, 3) Moderate need, 4) High need and 5) Not applicable.

The first stakeholder question pertained to county agriculture science teachers and the respondents perceived level of importance and need as seen by agriculture science teachers in their respective counties. The responses to this question were as follows, 17 (19.3%) responded no importance, 41 (49.6%) for low importance, 20 (22.7%) for moderate importance, five (5.7%) for high importance and two (2.7%) for not applicable (Table 4.13).

Table 4.13*: The level of perceived importance county agriculture science teachers place on having Emergency Management AIC.* (N=85)

Level of Importance	Frequency	% of Total
No importance	17	19.3
Low importance	41	46.6
Moderate importance	20	22.8
High importance	5	5.7
Not applicable	2	2.5
Unanswered	3	3.4

The responses to the level of need by agriculture science teachers were, 15 (17.1%) for no need, 24 (27.3%) for low need, 29 (33.0%) for moderate need, 11 (12.5%) for high need and two (2.5%) responded not applicable (Table 4.14).

Table 4.14: *The level of perceived need county agriculture science teachers place on having Emergency Management AIC.* (N=81)

Level of need	Frequency	% of Total
No need	15	17.1
Low need	24	27.3
Moderate need	29	33.0
High need	11	12.5
Not applicable	2	2.5
Unanswered	7	8.0

The next stakeholder question concerned the level of perceived importance and need by county agri-businesses. The responses to the level of importance were, six (6.8%) no importance, 31 (35.2%) low importance, 31 (35.2%) moderate importance, 13 (14.8%) high importance and two (2.5%) responded not applicable. The total responses to this question were 83 (94.3%) and five (5.7%) were unanswered (Table 4.15).

Table 4.15*: The level of perceived importance county agri-businesses place on having Emergency Management AIC.* (N=83)

Level of importance	Frequency	% of Total
No importance	6	6.9
Low importance	31	35.2
Moderate importance	31	35.2
High importance	13	14.8
Not applicable	2	2.5
Unanswered	5	5.7

The responses to the level of need by county agri-businesses were as follows, six (6.9%) no need, 24 (27.3%) low need, 36 (41.0%) moderate need, 13 (14.8%) high need and one (1.1%) responded not applicable. A total of 80 (91.0%) responded to this question and eight (9.1%) were unanswered (Table 4.16).

Table 4.16: *The level of perceived need county agri-businesses place on having Emergency Management AIC.* (N=80)

Level of need	Frequency	% of Total
No need	6	6.9
Low need	24	27.3
Moderate need	36	41.0
High need	13	14.8
Not applicable	1	1.1
Unanswered	8	9.1

The next stakeholder question concerned the perceived level of importance and need of Emergency Management AIC's by the county ANR agents themselves. The responses to the level of importance were, one (1.4%) no importance, five (5.7%) low importance, 26 (30.0%) moderate importance, 55 (62.5%) high importance and none (0.0%) responded not applicable. The total number of respondents to this question was 87 (98.7%) and one (1.4%) was unanswered (Table 4.17).

Table 4.17*: The level of perceived importance by county agriculture/natural resources agents on having Emergency Management AIC*. (N=87)

Level of importance	Frequency	% of Total
No importance	1	1.4
Low importance	5	5.7
Moderate importance	26	30.0
High importance	55	62.5
Not applicable	0	0.0
Unanswered	1	1.1

The responses by county ANR agents as to the perceived level of need were as follows, one (1.2%) no need, five (5.8%) no need, 23 (26.4%) moderate need, 51 (59.0%) high need and none (0.0%) responded not applicable. The total responding to this question was 80 (92.0%) and seven (8.0%) were unanswered (Table 4.18).

Table 4.18*: The level of perceived need by county agriculture/natural resources agents on having Emergency Management AIC.* (N=80)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	5	5.8
Moderate need	23	26.4
High need	51	58.7
Not applicable	0	0.0
Unanswered	7	8.0

The next perceived level of importance and need was that of county 4-H agents as seen by the respondents. The answer responses as to the perceived level of importance by 4-H agents are as follows, six (7.0%) no importance, 15 (17.2%) low importance, 22 (25.3%) moderate importance, 18 (21.0%) high importance and 24 (28.0%) responded

not applicable. The total number answering this question was 85 (97.7%) and two (2.3%) were unanswered (Table 4.19).

Table 4.19*: The level of perceived importance by county 4-H agents on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	6	6.9
Low importance	15	17.2
Moderate importance	22	25.3
High importance	18	21.0
Not applicable	24	27.6
Unanswered	2	2.3

The responses as to the level of need as perceived by county 4-H agents are as follows, six (6.9%) no need, 13 (15.0%) low need, 17 (20.0%) moderate need, 20 (23.0%) high need and 24 (28.0%) responded not applicable. The total number of responses to this question was 80 (92.0%) and seven (8.0%) were unanswered (Table 4.20).

Table 4.20*: The level of perceived need by county 4-H agents on having Emergency Management AIC.* (N=80)

Level of need	Frequency	% of Total
No need	6	6.9
Low need	13	15.0
Moderate need	17	20.0
High need	20	23.0
Not applicable	24	28.0
Unanswered	7	8.0

The next stakeholder question concerned the perceived importance and need as seen by county commercial livestock and poultry producers. The responses to the

perceived level of importance by county commercial livestock and poultry producers are as follows, two (2.3%) no importance, 24 (28.0%) low importance, 35 (40.2%) moderate importance, 24 (28.0%) high importance and none (0.0%) responded not applicable. A total of 85 (97.7%) answered this question and two (2.3%) were unanswered (Table 4.21).

Table 4.21*: The level of perceived importance by county commercial livestock and poultry producers on having Emergency Management* AIC. (N=85)

Level of importance	Frequency	% of Total
No importance	2	2.3
Low importance	24	28.0
Moderate importance	35	40.2
High importance	24	28.0
Not applicable	0	0.0
Unanswered	2	2.3

On the level of need side of the questions, the responses were as follows, four (4.6%) no need, 20 (23.0%) low need, 30 (34.5%) moderate need, 26 (30.0%) high need and none (0.0%) responded not applicable. A total of 80 (92.0%) answered this question and seven (8.0%) were unanswered (Table 4.22).

Table 4.22: *The level of perceived need by county commercial livestock and poultry producers on having Emergency Management AIC.* (N=80)

Level of need	Frequency	% of Total
No need	4	4.6
Low need	20	23.0
Moderate need	30	34.5
High need	26	30.0
Not applicable	0	0.0
Unanswered	7	8.0

The next stakeholder's level of perceived importance and need was that of county commissioners. The responses as to the level of importance of county commissioners are as follows, two (2.3%) no importance, 21 (24.1%) low importance, 36 (41.4%) moderate importance, 27 (31.0%) high importance and none (0.0%) responded not applicable. The total number of responses to this question was 86 (98.9%) and one (1.2%) was unanswered (Table 4.23).

Table 4.23: *The level of perceived importance by county commissioners on having Emergency Management AIC.* (N=86)

Level of importance	Frequency	% of Total
No importance	2	2.3
Low importance	21	24.1
Moderate importance	36	41.4
High importance	27	31.0
Not applicable0	0	0.0
Unanswered	1	1.2

The responses as to the level of perceived need by county commissioners are as follows, one (1.2%) no need, 18 (21.0%) low need, 34 (39.1%) moderate need, 28 (32.2%) high need and none (0.0%) responded not applicable. A total of 81 (93.1%) responded to this question and six (6.9%) were unanswered (Table 4.24).

Table 4.24: *The level of perceived need by county commissioners on having Emergency Management AIC.* (N=81)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	18	21.0
Moderate need	34	39.1
High need	28	32.2
Not applicable	0	0.0
Unanswered	6	6.9

The next stakeholder question concerned the perceived level of importance and need by county judges on having Emergency Management AIC's. The responses to this question are as follows, two (2.3%) no importance, 21 (24.1%) low importance, 28 (32.2%) moderate importance, 35 (40.2%) high importance and none (0.0%) responded not applicable. The total number of responses were 86 (98.9%) and one (1.2%) was unanswered (Table 4.25).

Table 4.25: *The level of perceived importance by county judges on having Emergency Management AIC.* (N=86)

Level of importance	Frequency	% of Total
No importance	2	2.3
Low importance	21	24.1
Moderate importance	28	32.2
High importance	35	40.2
Not applicable	0	0.0
Unanswered	1	1.2

The responses as to the perceived level of need by county judges were, two (2.3%) no need, 16 (18.4%) low need, 27 (31.0%) moderate need, 36 (41.4%) high need

and none (0.0%) responded not applicable. The total number of responses to this question was 81 (93.1%) and six (6.9%) were unanswered (Table 4.26).

Table 4.26: *The level of perceived need by county judges on having Emergency Management AIC.* (N=81)

Level of need	Frequency	% of Total
No need	2	2.3
Low need	16	18.4
Moderate need	27	31.0
High need	36	41.4
Not applicable	0	0.0
Unanswered	6	6.9

The study next sought to find the perceived level of importance and need by county sheriffs as seen by the respondents on having Emergency Management AIC in their county. The responses to the importance were as follows, none (0.0%) responded no importance, 22 (25.3%) low importance, 31 (35.6%) moderate importance, 30 (34.5%) high importance and two (2.3%) responded not applicable. The total of responses to this question were 85 (97.7%) and two (2.3%) were unanswered (Table 4.27).

Table 4.27: *The level of importance as perceived by county sheriffs on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	0	0.0
Low importance	22	25.3
Moderate importance	31	35.6
High importance	30	34.5
Not applicable	2	2.3
Unanswered	2	2.3

The responses to the need by county sheriffs were, one (1.2%) no need, 18 (21.0%) low need, 29 (33.3%) moderate need, 31 (35.6%) high need and one (1.2%) not applicable. The total of responses to this question were 80 (92.0%) and seven (8.0%) were unanswered (Table 4.28).

Table 4.28: *The level of perceived need by county sheriffs on having Emergency Management AIC.* (N=80)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	18	21.0
Moderate need	29	33.3
High need	31	35.6
Not applicable	1	1.2
Unanswered	7	8.0

The county Departments of Public Safety were the next stakeholder's level of perceived importance and need sought by the study as seen by respondents. The responses as to the level of importance were, four (4.6%) no importance, 25 (28.7%) low importance, 23 (26.4%) moderate importance, 26 (30.0%) high importance and five (5.8%) not applicable. The total number of responses to this question was 83 (95.4%) and four (4.6%) were unanswered (Table 4.29).

Table 4.29*: The level of perceived importance by county departments of public safety on having Emergency Management AIC.* (N=83)

Level of importance	Frequency	% of Total
No importance	4	4.6
Low importance	25	28.7
Moderate importance	23	26.4
High importance	26	30.0
Not applicable	5	5.8
Unanswered	4	4.6

The responses to the level of need as perceived by county Departments of Public Safety were, two (2.3%) no need, 19 (21.8%) low need, 29 (33.3%) moderate need, 23 (26.4%) high need and four (4.6%) not applicable. The total number of responses to the question were 77 (88.5%) and 10 (11.5%) were unanswered (Table 4.30).

Table 4.30: *The level of perceived need by county departments of public safety on having Emergency Management AIC.* (N=77)

Level of need	Frequency	% of Total
No need	2	2.3
Low need	19	21.8
Moderate need	29	33.3
High need	23	26.4
Not applicable	4	4.6
Unanswered	10	11.5

County Emergency Management Coordinator's level of perceived importance and need were next sought by the study as seen by the respondents. The responses to the perceived level of importance by the stakeholders were as follows, one (1.2%) no importance, 11 (12.6%) low importance, 19 (21.8%) moderate importance, 52 (59.8%)

high importance and three (3.5%) responded not applicable. The total number of responses to this question were 86 (98.9%) and one (1.2%) was unanswered (Table 4.31).

Table 4.31: *The level of perceived importance by county Emergency Management Coordinators on having Emergency Management AIC.* (N=86)

Level of importance	Frequency	% of Total
No importance	1	1.2
Low importance	11	12.6
Moderate importance	19	21.8
High importance	52	59.8
Not applicable	3	3.5
Unanswered	1	1.2

The responses to the perceived level of need were one (1.2%) no need, 8 (9.2%) low need, 20 (23.0%) moderate need, 50 (57.5%) high need and two (2.3%) responded not applicable. The total number of responses were 81 (93.1%) and six (6.9%) were unanswered (Table 4.32).

Table 4.32: *The level of perceived need by county Emergency Management Coordinators on having Emergency Management AIC.* (N=81)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	8	9.2
Moderate need	20	23.0
High need	50	57.5
Not applicable	2	2.3
Unanswered	6	6.9

County Fair Boards were the next stakeholders sought by the study for their perceived level of importance and need as seen by respondents concerning having Emergency Management AIC's. The responses as to the level of perceived importance

are as follows, 16 (18.4%) no importance, 31 (35.6%) low importance, 26 (29.9%) moderate importance, eight (9.2%) high importance and four (4.6%) not applicable. The total number of responses were 85 (97.7%) and two (2.3%) were unanswered (Table 4.33).

Table 4.33: *The level of perceived importance by county Fair Boards on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	16	18.4
Low importance	31	35.6
Moderate importance	26	29.9
High importance	8	9.2
Not applicable	4	4.6
Unanswered	2	2.3

The responses as to the perceived level of need were, 12 (13.8%) no need, 28 (32.2%) low need, 28 (32.2%) moderate need, nine (10.3%) high need and four (4.6%) responded not applicable. The total number of responses were 81 (3.1%) and six (6.9%) were unanswered (Table 4.34).

Table 4.34: *The level of perceived need by county Fair Boards on having Emergency Management AIC.* (N=81)

Level of need	Frequency	% of Total
No need	12	13.8
Low need	28	32.2
Moderate need	28	32.2
High need	9	10.3
Not applicable	4	4.6
Unanswered	2	2.3

The next county stakeholders were Fire Departments/EMS. The study sought the perceived level of importance and need by the respondents for county Fire Departments/EMS on having Emergency Management AIC's. The responses to the level of importance were as follows, two (2.3%) no importance, 20 (23.0%) low importance, 34 (39.1%) moderate importance, 25 (28.7%) high importance and none (0.0%) responded not applicable. The total number of responses were 81 (93.1%) and six (6.9%) were unanswered (Table 4.35)

Table 4.35: *The level of perceived importance by county Fire Departments/EMS on having Emergency Management AIC.* (N=81)

Level of importance	Frequency	% of Total
No importance	2	2.3
Low importance	20	23.0
Moderate importance	34	39.1
High importance	25	28.7
Not applicable	0	0.0
Unanswered	6	6.9

The responses to the level of need by county Fire Departments/EMS were, three (3.5%) no need, 18 (20.7%) low need, 33 (37.9%) moderate need, 25 (28.7%) high need and none (0.0%) responded not applicable. The total number of responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.36).

Table 4.36: *The level of perceived need by county Fire Departments/EMS on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	3	3.5
Low need	18	20.7
Moderate need	33	37.9
High need	25	28.7
Not applicable	0	0.0
Unanswered	8	9.2

The next perceived level of importance and need in the study was that of local Homeland Security as seen by the respondents. The responses to the level of importance by local Homeland Security were as follows, five (5.6%) no importance, 15 (17.2%) low importance, 13 (14.9%) moderate importance, 17 (19.5%) high importance and 29 (33.3%) responded not applicable. The total number of responses to this question were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.37).

Table 4.37: *The level of perceived importance by local Homeland Security on having Emergency Management AIC.* (N=79)

Level of importance	Frequency	% of Total
No importance	5	5.8
Low importance	15	17.2
Moderate importance	13	14.9
High importance	17	19.5
Not applicable	29	33.3
Unanswered	8	9.2

The responses to the level of need by local Homeland Security were, six (6.9%) no need, 12 (13.8%) low need, 14 (16.1%) moderate need, 16 (18.4%) high need and 28

(32.2%) responded not applicable. The total number of responses were 76 (87.4%) and 11 (12.6%) were unanswered (Table 4.38).

Table 4.38: *The level of perceived need by local Homeland Security on having Emergency Management AIC.* (N=76)

Level of need	Frequency	% of Total
No need	6	6.9
Low need	12	13.8
Moderate need	14	16.1
High need	16	18.4
Not applicable	28	32.2
Unanswered	11	12.6

Local bankers or lending agencies were the next stakeholders sought by the study as to the perceived level of importance and need of having Emergency Management AIC's as seen by respondents. The responses to the level of importance were as follows, 15 (17.2%) no importance, 43 (49.4%) low importance, 17 (19.5%) moderate importance, five (5.6%) high importance and two (2.3%) not applicable. The total responses to this question were 82 (94.3%) and five (5.7%) were unanswered (Table 4.39).

Table 4.39: *The level of perceived importance by local bankers or lending agencies on having Emergency Management AIC.* (N=82)

Level of importance	Frequency	% of Total
No importance	15	17.2
Low importance	43	49.4
Moderate importance	17	19.5
High importance	5	5.8
Not applicable	2	2.3
Unanswered	5	5.7

The responses to the level of need were, 15 (17.2%) no need, 32 (36.7%) low need, 21 (24.1%) moderate need, eight (9.2%) high need and two (2.3%) responded not applicable. The total number of responses were 78 (89.7%) and nine (10.3%) were unanswered (Table 4.40).

Table 4.40: *The level of perceived need by local bankers or lending agencies on having Emergency Management AIC.* (N=78)

Level of need	Frequency	% of Total
No need	15	17.2
Low need	32	36.7
Moderate need	21	24.1
High need	8	9.2
Not applicable	2	2.3
Unanswered	9	10.3

Local commodity groups were the next stakeholder's perceived level of importance and need as to having Emergency Management AIC's as seen by respondents. The responses to their perceived level of importance are as follows, seven (8.1%) no importance, 35 (40.2%) low importance, 24 (27.6%) moderate importance, six (6.9%) high importance and nine (10.3%) not applicable. The total number of responses to this question were 81 (93.1%) and six (6.9%) were unanswered (Table 4.41).

Table 4.41: *The level of perceived importance by local commodity groups on having Emergency Management AIC.* (N=81)

Level of importance	Frequency	% of Total
No importance	7	8.1
Low importance	35	40.2
Moderate importance	24	27.6
High importance	6	6.9
Not applicable	9	10.3
Unanswered	6	6.9

The response to the level of need by local commodity groups were, eight (9.2%) no need, 29 (33.3%) low need, 26 (29.9%) moderate need, eight (9.2%) high need and seven (8.1%) not applicable. The total number of responses were 78 (89.7%) and nine (10.3%) were unanswered (Table 4.42).

Table 4.42: *The level of perceived need by local commodity groups on having Emergency Management AIC.* (N=78)

Level of need	Frequency	% of Total
No need	8	9.2
Low need	28	33.3
Moderate need	26	29.9
High need	8	9.2
Not applicable	7	8.1
Unanswered	9	10.3

The perceived level of importance and need by local veterinarians as seen by respondents was also sought by the study. The responses to the level of importance by local veterinarians are as follows, one (1.2%) no importance, 15 (17.2%) low importance, 29 (33.3%) moderate importance, 33 (37.9%) high importance and six (6.9%) responded

not applicable. The total number of responses to this question were 84 (96.6%) and three (3.5%) were unanswered (Table 4.43).

Table 4.43: *The level of perceived importance by local veterinarians on having Emergency Management AIC.* (N=84)

Level of importance	Frequency	% of Total
No importance	1	1.2
Low importance	15	17.2
Moderate importance	29	33.3
High importance	33	37.9
Not applicable	6	6.9
Unanswered	3	3.5

The responses to the level of need as perceived by local veterinarians were as follows, one (1.2%) no need, 14 (16.1%) low need, 25 (28.7%) moderate need, 33 (37.9%) high need and six (6.9%) not applicable. The total responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.44).

Table 4.44: *The level of perceived need by local veterinarians on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	14	16.1
Moderate need	25	28.7
High need	33	37.9
Not applicable	6	6.9
Unanswered	8	9.2

The last county stakeholder sought by the study to determine the perceived level of importance and need was non-commercial/hobby livestock and poultry producers. The respondents answered the level of perceived importance as follows, 15 (17.2%) no

importance, 31 (35.6%) low importance, 24 (27.6%) moderate importance, eight (9.2%) high importance and three (3.5%) not applicable. The total number of responses were 81 (93.1%) and six (6.9%) were unanswered (Table 4.45).

Table 4.45: *The level of perceived importance by local non-commercial/hobby livestock and poultry producers on having Emergency Management AIC.* (N=81)

Level of importance	Frequency	% of Total
No importance	15	17.2
Low importance	31	35.6
Moderate importance	24	27.6
High importance	8	9.2
Not applicable	3	3.5
Unanswered	6	6.9

The responses to the level of need were 14 (16.1%) no need, 25 (28.7%) low need, 25 (28.7%) moderate need, 11 (12.6%) high need and two (2.3%) not applicable. The total number of responses were 77 (88.5%) and 10 (11.5%) were unanswered (Table 4.46).

Table 4.46*: The level of perceived need by local non-commercial/hobby livestock and poultry producers on having Emergency Management AIC.* (N=77)

Level of need	Frequency	% of Total
No need	14	16.1
Low need	25	28.7
Moderate need	25	28.7
High need	11	12.6
Not applicable	2	2.3
Unanswered	10	11.5

The study next sought to find the perceived level of importance and need of state and federal agencies as seen locally by the survey respondents. The first agency was the

Farm Services Agency (FSA) as to the level of perceived importance they place on having Emergency Management AIC's as seen by the respondents. The same double matrix format was used for the respondents with the possible answers of 1) No importance, 2) low importance, 3) moderate importance, 4) high importance and 5) not applicable and on the need side of the matrix 1) no need, 2) low need, 3) moderate need, 4) high need and 5) not applicable.. The responses were as follows for the FSA, four (4.6%) no importance, 22 (25.3%) low importance, 41 (47.1%) moderate importance, 15 (17.2%) high importance and three (3.5%) not applicable. Total responses to this question were 85 (97.7%) and two (2.3%) were unanswered (Table 4.47).

Table 4.47: *The level of perceived importance by the Farm Services Agency on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	4	4.6
Low importance	22	25.3
Moderate importance	41	47.1
High importance	15	17.2
Not applicable	3	3.5
Unanswered	2	2.3

The responses to the level of need were, three (3.5%) no need, 19 (21.8%) low need, 39 (44.8%) moderate need, 16 (18.4%) high need and one (1.2%) responded not applicable. The total responses were 78 (89.7%) and nine (10.3%) were unanswered (Table 4.48).

Table 4.48: *The level of perceived need by the Farm Services Agency on having Emergency Management AIC*. (N=78)

Level of need	Frequency	% of Total
No need	3	3.5
Low need	19	21.8
Moderate need	39	44.8
High need	16	18.4
Not applicable	1	1.2
Unanswered	9	10.3

The study next sought the perceived level of importance and need of having Emergency Management AIC's by the federal Natural Resources and Conservation Service (NRCS) as seen by respondents. The responses as to the level of importance were, four (4.6%) no importance, 22 (25.3%) low importance, 42 (48.3%) moderate importance, 15 (17.2%) high importance and two (2.3%) not applicable. The total number of responses to this question were 85 (97.7%) and two (2.3%) were unanswered (Table 4.49).

Table 4.49: *The level of perceived importance by NRCS on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	4	4.6
Low importance	22	25.3
Moderate importance	42	48.3
High importance	15	17.2
Not applicable	2	2.3
Unanswered	2	2.3

The responses to the level of need perceived by NRCS were, four (4.6%) no need, 18 (20.7%) low need, 42 (48.3%) moderate need, 14 (16.1%) high need and one (1.2%)

not applicable. The total responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.50).

Table 4.50: *The level of perceived need by the NRCS on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	4	4.6
Low need	18	20.7
Moderate need	42	48.3
High need	14	16.1
Not applicable	1	1.2
Unanswered	8	9.2

The study next sought the perceived level of importance and need on having Emergency Management AIC's by Texas AgriLife Extension Service Administration as seen by the respondents to the survey. The responses to the level of perceived importance are as follows, one (1.2%) no importance, none (0.0%) low importance, 11 (12.6%) moderate importance, 72 (82.8%) high importance and one (1.2%) not applicable. The total number of responses to this question were 85 (97.7%) and two (2.3%) were unanswered (Table 4.51).

Table 4.51: *The level of perceived importance by Texas AgriLife Extension Service Administration on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	1	1.2
Low importance	0	0.0
Moderate importance	11	12.6
High importance	72	82.8
Not applicable	1	1.2
Unanswered	2	2.3

The responses to the level of need by Extension Administrators were, one (1.2%) no need, none (0.0%) low need, 12 (13.8%) moderate need, 66 (75.7%) high need and none (0.0%) responded not applicable. The total number of responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.52).

Table 4.52: *The level of perceived need by Texas AgriLife Extension Service Administration on having Emergency Management AIC*. (N=79)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	0	0.0
Moderate need	12	13.8
High need	66	75.7
Not applicable 0	0	0.0
Unanswered	8	9.2

The next state stakeholders perceived importance and need sought by the study was that of Texas AgriLife Extension Specialists as seen by respondents. The responses to this question were as follows, one (1.2%) no importance, six (6.9%) low importance, 30 (34.5%) moderate importance, 45 (51.7%) high importance and one (1.2%) not applicable. The total number of responses were 83 (95.4%) and four (4.6%) were unanswered (Table 4.53).

Table 4.53: *The level of perceived importance by Texas AgriLife Extension Service Specialists on having Emergency Management AIC.* (N=83)

Level of importance	Frequency	% of Total
No importance	1	1.2
Low importance	6	6.9
Moderate importance	30	34.5
High importance	45	51.7
Not applicable	1	1.2
Unanswered	4	4.6

The responses to the perceived level of need were, one (1.2%) no need, four (4.6%) low need, 33 (37.9%) moderate need, 40 (46.0%) high need and none (0.0%) responded not applicable. The total responses to the question were 78 (89.7%) and nine (10.3%) were unanswered (Table 4.54).

Table 4.54: *The level of perceived need by Texas AgriLife Extension Service Specialists on having Emergency Management AIC.* (N=78)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	4	4.6
Moderate need	33	37.9
High need	40	46.0
Not applicable	0	0.0
Unanswered	9	10.3

The Texas Department of Agriculture was the next state stakeholder's perceived level of importance and need sought by the study as seen by respondents. The responses to the level of importance were, one (1.2%) no importance, 11 (12.6%) low importance, 27 (31.0%) moderate importance, 45 (51.7%) high importance and one (1.2%) not

applicable. The total number of responses to the question were 85 (97.7%) and two (2.3%) were unanswered (Table 4.55).

Table 4.55: *The level of perceived importance by the Texas Department of Agriculture on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	1	1.2
Low importance	11	12.6
Moderate importance	27	31.0
High importance	45	51.7
Not applicable	1	1.2
Unanswered	2	2.3

The responses to the level of need were as follows, one (1.2%) no need, six (6.9%) low need, 30 (34.5%) moderate need, 42 (48.3%) high need and none (0.0%) responded not applicable. The total number of responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.56).

Table 4.56: *The level of perceived need by the Texas Department of Agriculture on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	6	6.9
Moderate need	30	34.5
High need	42	48.3
Not applicable	0	0.0
Unanswered	8	9.2

The next perceived level of importance and need sought was that of the state Texas Animal Health Commission as seen by the respondents. The responses to the level of importance were, one (1.2%) no importance, one (1.2%) low importance, 13 (14.9%)

moderate importance, 69 (79.3%) high importance and one (1.2%) not applicable. The total responses were 85 (97.7%) and two (2.3%) were unanswered (Table 4.57).

Table 4.57: *The level of perceived importance by the Texas Animal Health Commission on having Emergency Management AIC.* (N=85)

Level of importance	Frequency	% of Total
No importance	1	1,2
Low importance	1	1.2
Moderate importance	13	14.9
High importance	69	79.3
Not applicable	1	1.2
Unanswered	2	2.3

The responses to the level of need were, one (1.2%) no need, one (1.2%) low need, 13 (14.9%) moderate need, 64 (73.6%) high need and none (0.0%) responded not applicable. The total responses to this question were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.58)

Table 4.58: *The level of perceived need by the Texas Animal Health Commission on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	1	1.2
Low need	1	1.2
Moderate need	13	14.9
High need	64	73.6
Not applicable	0	0.0
Unanswered	8	9.2

The state Texas Parks and Wildlife Department's level of perceived importance and need was next sought by the study as seen by the respondents. The responses to the level of importance were, three (3.5%) no importance, 15 (17.2%) low importance, 38

(43.7%) moderate importance, 26 (29.9%) high importance and two (2.3%) responded not applicable. The total number of responses were 84 (96.6%) and three (3.5%) were unanswered (Table 4.59).

Table 4.59: *The level of perceived importance by the Texas Parks and Wildlife Department on having Emergency Management AIC.* (N=84)

Level of importance	Frequency	% of Total
No importance	3	3.5
Low importance	15	17.2
Moderate importance	38	43.7
High importance	26	29.9
Not applicable	2	2.3
Unanswered	3	3.5

The responses to the level of need by Texas Parks and Wildlife were four (4.6%) no need, 12 (13.8%) low need, 41 (47.1%) moderate need, 21 (24.1%) high need and one (1.2%) responded not applicable. The total number of responses were 79 (90.8%) and eight (9.2%) were unanswered (Table 4.60).

Table 4.60: *The level of perceived need by the Texas Parks and Wildlife Department on having Emergency Management AIC.* (N=79)

Level of need	Frequency	% of Total
No need	4	4.6
Low need	12	13.8
Moderate need	41	47.1
High need	21	24.1
Not applicable	1	1.2
Unanswered	8	9.2

The last state stakeholder's perceived level of importance and need sought by the study was that of the Texas Commission on Environmental Quality (TCEQ) as seen by

respondents. The responses to the level of importance were as follows, fivr (5.8%) no importance, 25 (28.7%) low importance, 22 (25.3%) moderate importance, 22 (25.3%) high importance and six (6.9%) not applicable. The total responses to this question were 80 (92.0%) and seven (8.0%) were unanswered (Table 4.61).

Table 4.61: *The level of perceived importance by the Texas Commission on Environmental Quality on having Emergency Management AIC.* (N=80)

Level of importance	Frequency	% of Total
No importance	5	5.8
Low importance	25	28.7
Moderate importance	22	25.3
High importance	22	25.3
Not applicable	6	6.9
Unanswered	7	8.0

The responses to the level of need by TCEQ were five (5.8%) no need, 24 (27.6%) low need, 21 (24.1%) moderate need, 21 (24.1%) high need and four (4.6%) not applicable. The total responses to the question were 75 (86.2%) and 12 (13.8%) were unanswered, (Table 4.62%).

Table 4.62: *The level of perceived need by the Texas Commission on Environmental Quality on having Emergency Management AIC*. (N=75)

Level of need	Frequency	% of Total
No need	5	5.8
Low need	24	27.6
Moderate need	21	24.1
High need	21	24.1
Not applicable	4	4.6
Unanswered	12	13.8

Emergency Management/Preparedness Involvement

The research study survey questionnaire also had questions pertaining to the involvement by Texas AgriLife Extension Service agents in the counties of the respondents. The first question asked the respondents what types of Emergency Management/Preparedness education has taken place in their respective counties. The possible answer responses covered the different Extension disciplines that might be in each county which included 1) agriculture/natural resources, 2) family and consumer sciences, 3) 4-H and youth development, 4) horticulture, 5) office staff and 6) other. The respondents were instructed to mark all of the answers that applied to them, but many of the respondents did not have all of the disciplines indicated in the answers in their respective counties,

The responses to this question were as follows, 73 (83.0%) agriculture/natural resources, 38 (43.2%) family and consumer sciences, 50 (56.8%) 4-H and youth development, fivr (5..7%) horticulture, 56 (63.6%) office staff and 15 (17.0%) other. The total number of respondents was 88 and none were left unanswered (Table 4.63).

Table 4.63: *What types of Emergency Management/Preparedness education has taken place in your county?* (N=88)

Discipline	Frequency	% of Total
Agriculture/natural resources	73	83.0
Family and consumer sciences	38	43.2
4-H and youth development	50	56.8
Horticulture	5	5.7
Office staff	56	63.6

Other	15	17.0
Unanswered	0	0.0

The next set of questions were yes/no answer as to the level of involvement in Emergency Management/Preparedness. The first question asked, *"Have you been involved in an emergency management situation?"* The responses were 50 (57.5%) no and 36 (41.4%) yes. A total of 86 (98.8%) answered the question and one (1.2%) did not answer (Table 4.64).

Table 4.64: *Have you been involved in an emergency management situation?* (N=86)

Answer	Frequency	% of Total
No	50	57.5
Yes	36	41.4
Unanswered	1	1.1

The next involvement yes/no question asked, *"Have you or will you have an active role in the establishment of an AIC?"* The responses were, 12 (13.8%) no and 74 (85.1%) yes. The total number of responses were 86 (98.6%) and one (1.2%) did not answer (Table 4.65).

Table 4.65: *Have you or will you have an active role in the establishment of an AIC?* (N=86)

Answer	Frequency	% of Total
No	12	13.8
Yes	74	85.1
Unanswered	1	1.1

"If your county has an Emergency Management AIC, do you serve on that committee?" was the next involvement question asked on the survey. The responses

were, nine (10.3%) no and 74 (85.1%) yes. A total of 83 (95.4%) respondents answered and four (4.6%) did not answer (Table 4.66).

Table 4.66: *If your county has an Emergency Management AIC, do you serve on that committee?* (N=83)

Answer	Frequency	% of Total
No	9	10.3
Yes	74	85.1
Unanswered	4	4.6

"Do any of your co-workers play an active role in Emergency Management/Preparedness education?" was the next involvement question. There responses were as follows, 25 (28.7%) no and 61 (70.1%) yes. The total responses were 86 (98.6%) and one (1.2%) did not answer (Table 4.67).

Table 4.67: *Do any of your co-workers play an active role in Emergency Management/Preparedness education?* (N-86)

Answer	Frequency	% of Total
No	25	28.7
Yes	61	70.1
Unanswered	1	1.2

The next involvement question asked, *"Have your clientele been involved in an Emergency Management situation?"* The responses were, 44 (50.6%) no and 42 (48.3%) yes. The total number of responses were 86 (98.6%) and one (1.2%) did not answer (Table 4.68).

Table 4.68: *Have your clientele been involved in an Emergency Management situation?* (N=86)

Answer	Frequency	% of Total
No	44	50.6
Yes	42	48.3
Unanswered	1	1.1

The next question asked the respondents if they had been involved in an animal disaster situation. Their responses were as follows, 61 (70.1%) answered no and 25 (28.7%) answered yes. A total of 86 (98.6%) answered this question and one (1.2%) did not answer (Table 4.69).

Table 4.69: *Have you been involved in an animal disaster situation?* (N=86)

Answer	Frequency	% of Total
No	61	70.1
Yes	25	28.7
Unanswered	1	1.2

"Are you involved in your county's Emergency Management AIC plan for disasters and emergencies?" was the next involvement question. The responses were as follows, 13 (14.9%) answered no and 71 (81.6%) answered yes. The total number of responses were 84 (96.6%) and three (3.5%) did not answer (Table 4.70).

Table 4.70: *Are you involved in your county's Emergency Management AIC plan for disasters and emergencies?* (N=84)

Answer	Frequency	% of Total
No	13	14.9
Yes	71	81.6
Unanswered	3	3.5

"Are you a part of your county's Emergency Management AIC?" was the next question concerning involvement. The responses were as follows, two (2.3%) answered no and 82 (94.3%) answered yes. The total number of responses were 84 (96.6%) and three (3.5%) did not answer (Table 4.71).

Table 4.71: *Are you a part of your county's Emergency Management AIC?* (N=84)

Answer	Frequency	% of Total
No	2	2.3
Yes	82	94.3
Unanswered	3	3.4

The final involvement question asked, *"Have your clientele been involved in an animal disaster situation?"* The responses were, 64 (73.6%) answered no and 21 (24.1%) answered yes. The total number of responses were 85 (97.7%) and two (2.3%) did not answer (Table 4.72).

Table 4.72: *Have your clientele been involved in an animal disaster situation?* (N=85)

Answer	Frequency	% of Total
No	64	73.6
Yes	21	24.1
Unanswered	2	2.3

Value of Animal Issues Plan and Committees

Then study next sought the answers to questions concerning the value of having local animal issues plans and committees. This question set was arranged as a single matrix with possible answers being, 1) strongly disagree, 2) disagree, 3) agree and 4) strongly agree.

The first question in this set stated, *"Emergency Management/Preparedness Animal Issues information and education is vital and necessary at local levels."* The responses were as follows, one (1.2%) strongly disagree, three (3.5%) disagree, 68 (78.2%) agree and 14 (16.1%) strongly agree. The total number that answered this question were 86 (98.9%) and one (1.2%) were unanswered (Table 4.73).

Table 4.73: *Emergency Management/Preparedness Animal Issues information and education is vital and necessary at local levels?* (N=86)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	3	3.5
Agree	68	78.2
Strongly agree	14	16.1
Unanswered	1	1.2

The next single matrix statement said, *"Emergency Management/Preparedness Animal Issues Committees receive vital information and education from reputable sources."* The responses were as follows, three (3.5%) strongly disagree, 14 (16.1%) disagree, 62 (71.3%) agree and seven (8.1%) strongly agree. The total responses were 86 (98.6%) and one (1.2%) did not answer (Table 4.74).

Table 4.74: *Emergency Management/Preparedness Animal Issues Committees receive vital information and education from reputable sources.* (N=86)

Answer	Frequency	% of Total
Strongly disagree	3	3.5
Disagree	14	16.1
Agree	62	71.3
Strongly agree	7	8.1
Unanswered	1	1.2

"*Having an Emergency Management Animal Issues plan will aid recovery of local producers in the event of an animal disaster"* was the next statement in the single matrix question set. The responses were, one (1.2%) strongly disagree, 10 (11.5%) disagree, 61 (70.1%) agree and 13 (14.9%) strongly agree. The total responses were 85 (97.7%) and two (2.3%) did not answer (Table 4.75)

Table 4.75: *Having an Emergency Management Animal Issues plan will aid recovery of local producers in the event of an animal disaster*. (N=85)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	10	11.5
Agree	61	70.1
Strongly agree	13	14.9
Unanswered	2	2.3

The next single matrix question stated, "*Having an Emergency Management Animal Issues Committee will help protect county animal industries continuity of business in the event of a local animal disaster."* The responses were, one (1.2%) strongly disagree, 12 (13.8%) disagree, 60 (69.0%) agree and 13 (14.9%) strongly agree. The total responses were 86 (98.6%) and one (1.2%) did not answer (Table 4.76).

Table 4.76: *Having an Emergency Management Animal Issues Committee will help protect county animal industries continuity of business in the event of a local animal disaster*. (N=86)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	12	13.8
Agree	60	69.0
Strongly agree	13	14.9
Unanswered	1	1.2

"*Having a comprehensive Emergency Management Animal Issues plan in place will provide a real benefit during a local animal disaster"* was the next matrix question in the set. The responses were, one (1.2%) strongly disagree, 10 (11.5%) disagree, 53 (60.9%) agree and 19 (21.8%) strongly agree. The total number of responses were 83 (95.4%) and four (4.6%) were unanswered (Table 4.77).

Table 4.77: *Having a comprehensive Emergency Management Animal Issues plan in place will provide a real benefit during a local animal disaster.* (N=83)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	10	11.5
Agree	53	60.9
Strongly agree	19	21.8
Unanswered	4	4.6

The next statement asked respondents, "*Having an established Emergency Management Animal Issues Committee will benefit all sectors of animal agriculture in a county."* The responses were, one (1.2%) strongly disagree, 11 (12.6%) disagree, 60 (69.0%) agree and 13 (14.9%) strongly agree. The total responses were 85 (97.7%) and two (2.3%) were not answered (Table 4.78).

Table 4.78: *Having an established Emergency Management Animal Issues Committee will benefit all sectors of animal agriculture in a county.* (N=85)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	11	12.6
Agree	60	69.0
Strongly agree	13	14.9
Unanswered	2	2.3

"Emergency Management Animal Issues Committees are well informed" was the next single matrix question. The responses were, three (3.4%) strongly disagree, 29 (33.3%) disagree, 48 (55.2%) agree and four (4.6%) strongly agree. The total responses were 84 (96.6%) and three (3.5%) were unanswered (Table 4.79).

Table 4.79: *Emergency Management Animal Issues Committees are well informed.* (N=84)

Answer	Frequency	% of Total
Strongly disagree	3	3.5
Disagree	29	33.3
Agree	48	55.2
Strongly agree	4	4.6
Unanswered	3	3.5

"An Emergency Management Animal Issues plan will be a valuable tool to guide responses to an animal related event" was the next statement in this question set. The responses were, one (1.2%) strongly disagree, 10 (11.5%) disagree, 57 (65.5%) agree and 17 (19.5%) strongly agree. The total number of responses were 85 (97.7%) and two (2.3%) did not answer (Table 4.80).

Table 4.80: *An Emergency Management Animal Issues plan will be a valuable tool to guide responses to an animal related event*. (N=85)

Answer	Frequency	% of Total
Strongly disagree	1	1.2
Disagree	10	11.5
Agree	57	65.5
Strongly agree	17	19.5
Unanswered	2	2.3

Collaboration Efforts

The study next sought to determine the collaborative efforts with other agencies by the respondents. These questions were again arranged in a single matrix format with possible answers being, 1) never, 2) sometimes, 3) frequently and 4) always.

The first question in this set asked, *"How often do you collaborate with the Farm Services Agency (FSA)?"* Responses were, none (0.0%) never, 20 (23.0%) sometimes, 49 (56.3%) frequently and 17 (19.5%) always. The second agency was the Natural Resources and Conservation Service (NRCS). The responses were, one (1.2%) never, 15 (17.2%) sometimes, 48 (55.2%) frequently and 21 (24.1%) always. Next was the Texas Department of Agriculture (TDA) and the answers were as follows, one (1.2%) never, 41 (47.1%) sometimes, 37 (42.5%) frequently and seven (8.1%) always. The Texas Animal Health Commission (TAHC) was next and the answers were, four (4.6%) never, 52 (59.8%) sometimes, 23 (26.4%) frequently and six (6.9%) always. The Texas Parks and Wildlife Department (TPWD) responses were, six (6.9%) never, 50 (57.5%) sometimes, 25 (28.7%) frequently and five (5.8%) always. University Professors (Non-Extension) were the next department and the answers were as follows, 24 (27.6%) never, 45 (51.7%) sometimes, 15 (17.2%) frequently and two (2.3%) always. Fire Departments/EMS were next and the answers were, 17 (19.5%) never, 52 (59.8%) sometimes, 14 (16.1%) frequently and two (2.3%) always. The questionnaire then asked about the collaboration with Law Enforcement and the responses were, 11 (12.6%) never, 42 (48.3%) sometimes, 30 (34.5%) frequently and two (2.3%) always. The responses to the Texas Department of Transportation (TXDOT) were as follows, 39 (44.8%) never, 42 (48.3%) sometimes, five

(5.8%) frequently and none (0.0%) responded always. The Texas Commission on Environmental Quality (TCEQ) were as follows, 29 (33.3%) never, 48 (55.2%) sometimes, eight (9.2%) frequently and one (1.2%) always. The results of the answers to how often the respondents collaborate with other agencies and departments are listed in (Table 4.81).

Table 4.81: *How often do you collaborate with the following agencies?* (N=86)

Agency	Frequency	% of Total
FSA		
Never	0	0.0
Sometimes	20	23.0
Frequently	49	56.3
Always	17	19.5
NRCS		
Never	1	1.2
Sometimes	15	17.2
Frequently	48	55.2
Always	21	24.1
TDA		
Never	1	1.2
Sometimes	41	47.1
Frequently	37	42.5
Always	7	8.1
TAHC		
Never	4	4.6
Sometimes	52	59.8
Frequently	23	26.4
Always	6	6.9
TPWD		

Never	6	6.9
Sometimes	50	57.5
Frequently	25	28.7
Always	5	5.8
University Professors (Non-Extension)		
Never	24	27.6
Sometimes	45	51.7
Frequently	15	17.2
Always	2	2.3
Fire Departments/EMS		
Never	17	19.5
Sometimes	52	59.8
Frequently	14	16.1
Always	2	2.3
Law Enforcement		
Never	11	12.6
Sometimes	42	48.3
Frequently	30	34.5
Always	2	2.3
TXDOT		
Never	39	44.8
Sometimes	42	48.3
Frequently	5	5.8
Always	0	0.0
TCEQ		
Never	29	33.3
Sometimes	48	55.2
Frequently	8	9.2

Always	1	1.2

Extension's Advantages and Obstacles with AIC's

The questionnaire contained three yes/no questions that sought the perceptions of respondents as to the advantages and obstacles for them in the management of AIC's. The respondents were given the opportunity to explain why if they answered a certain way to each question.

The first question asked, *"Do you believe it is to Extension's advantage to have a large role in Emergency Management AIC's?"* The responses to this question were as follows, 24 (27.6%) answered no and 61 (70.1%) answered yes. A total of 85 (97.7%) responded to the question and two (2.3%) did not answer the question. For those that answered no to the question, one respondent replied, *"It may put us in the middle of a situation that we are not prepared to handle as individuals."* Another respondent answering no said, *"It doubles the effort of the Texas Animal Health Commission."* Still yet another respondent that answered no said, *"In the county I serve, the county Judge and Commissioners feel the Emergency Management plan is the responsibility of the Emergency Management Coordinator and he can gather resources where needed."*

The second question concerning the perceived advantages and obstacles asked the respondents, *"Have you experienced obstacles in creating Emergency Management AIC's in your county?"* The responses were as follows, 36 (41.7%) answered no and 50 (58.1%) answered yes. A total of 86 (100.0%) answered the question and none (0.0%) did not answer. One respondent that answered yes to this question responded as to why by stating, *"Finding people to serve who see the need is difficult."* Another stated, *"The*

Emergency Management Coordinator did not grasp the concept of local needs. She felt this was a hurricane plan and this is a pass through county." Other comments were, *"EMC does not care about it", "County Judge and Emergency Management Coordinator have little interest."*

The third question concerning the perceived advantages and obstacles asked respondents, *"Has having an Emergency Management AIC had a positive effect on the local animal industry?"* The responses were, 38 (44.2%) answered no and 34 (39.5%) answered yes. Of the respondents, 10 (11.6%) indicated they did not have an AIC in their county. A total of 82 (95.4%) respondents answered this question and four (4.7%) did not answer. For the respondents answering no, some of the comments were, *"This is not a factor at this time, we are drafting a plan", "Most producers have no clue on what it is or how it affects them", "Local livestock producers have their own plan in place and do not wish to have outside help"* (Table 4.82).

Table 4.82: *Perceptions of respondents as to the advantages and obstacles for them in the management of AIC's.* (N=86)

Question	Frequency	% of Total
Do you believe it is to Extension's advantage to have a large role in Emergency Management AIC's?		
No	24	27.6
Yes	61	70.1
Unanswered	2	2.3
Have you experienced obstacles in creating Emergency Management AIC's in your county?		
No	36	41.9
Yes	50	58.1
Unanswered	0	0.0

Has having an Emergency Management AIC had a positive effect on the local animal industry?		
No	38	44.2
Yes	34	39.5
Do not have one	10	11.6
Unanswered	4	4.7

County Income – Agriculture and Non-Agriculture

The study sought to determine if county income from agriculture and non-agriculture sources played a role in the perception of importance in Emergency Management Animal Issues by the respondents, stakeholders, and other local, state and federal agencies. Two questions asked the respondents the estimated cash receipts from agriculture and non-agriculture in their respective counties.

The first question stated, "What is the estimated cash receipt value of agriculture in your county?" The number of respondents answering this question were 62 (58.8%) and 23 (27.1%) of the respondents did not answer this question. The answers ranged from a low of 3 million dollars to a high of 159 million dollars.

The second question asked, *"What is the estimated cash receipt value from non-agriculture in your county?"* The number of respondents answering this question were 52 (61.2%) and 23 (27.1%) again did not answer. The cash receipt responses ranged from a low of 22 million dollars to a high of 286 million dollars (Table 4.83)

Table 4.83: *What is the estimated cash receipt value of agriculture and non-agriculture in your county?* (N=85)

Agriculture cash receipt value (Top 9 answers displayed)	Frequency	% of Total
3 million	1	1.2
15 million	1	1.2
19 million	1	1.2
20 million	2	2.4
22 million	1	1.2
30 million	3	3.5
34 million	1	1.2
42 million	1	1.2
159 million	1	1.2
Non-agriculture cash receipt value (Top 9 answers displayed)		
22 million	1	1.2
30 million	1	1.2
32 million	1	1.2
34 million	1	1.2
35 million	1	1.2
60 million	1	1.2
125 million	1	1.2
150 million	1	1.2
286 million	1	1.2

Correlations

The research study sought to determine if there were relationships between answers to demographical questions and answers to the double and single matrix questions. This was done to answer the research objectives of determining what

respondents perceived as advantages and obstacles associated with the organization, facilitation and implementation of Emergency Preparedness Animal Issues education as well as the perceived role in the facilitation of the formation of county animal issues committees and the development of animal issues plans.

Demographic questions concerning the respondent's Extension district, age, gender, years of employment, degree field, county populations and county agriculture and non-agriculture cash receipts were compared to the single and double matrix questions concerning the needs assessment of Emergency Management in counties and the questions concerning AIC establishment and education.

Pearson Product Moment Correlations were run on all the variables to determine if significant relationships existed. In the study, very slight negative to very slight positive relationships existed between demographic data and the matrix questions concerning needs assessments of perceived importance and need by stakeholders. The same very slight negative to very slight positive relationships also existed between demographic data and answers to all questions concerning AIC establishment, education and collaboration with other agencies. This time, there were significant relationships found between the Extension district the respondents were employed within and the responses to questions, 1) Have you been involved in an Emergency Management situation, 2) Have your clientele been involved in an Emergency Management situation, 3) Do you serve on your counties AIC, 4) Are you involved in your counties Emergency Management plan and 5) What is your degree field.

The Pearson Product Moment Correlation between Extension district and question 1 was .23, between Extension district and question 2 was -.22, between Extension district question 3, .29, between Extension district and question 4, -.24 and between Extension district and question 5, .28 with a *p* value of .01. All were significant ($p < .05$) (Table 4.84).

Table 4.84: *Pearson Product-Moment Correlations between Extension district and Emergency Management involvement (N=99)*

Variables	1	2	3	4	5	6
Extension district	-	.23*	.29*	-.22*	-.24*	.28*
Have you been involved in an Emergency Management situation?		-	.07	.44*	-.09	.01
Have your clientele been involved in an Emergency Management situation?			-	.04	.03	.10
Do you serve on your counties AIC?				-	.30*	-.11
Are you involved in your counties Emergency Management plan?					-	.02
What is your degree field?						-

*$p < .05$

Questions concerning the establishment of an AIC when compared to all other variables also displayed some significant relationships. The first correlation compared *"How long has your county had an established AIC"* to all other variables. Significant relationships were found with the questions or variable of 1) How often the AIC meets, 2) How many other agencies have helped in the establishment of your counties AIC, 3) The level of perceived importance on having an AIC by Agri-science teacher, 4) The level of perceived importance on having an AIC by County Commissioners, 5) The level of perceived need on having an AIC by County Commissioners, 6) The level of perceived

importance on having an AIC by County Judges, 7) The level of perceived importance on having an AIC by the Texas Department of Agriculture, 8) Do you serve on your counties AIC, 9) Emergency Management Animal Issues information and education is vital and necessary and 10) Has having an Emergency Management AIC had a positive effect on local animal industry continuity.

The Pearson Product Moment Correlations between how long a county has had an established AIC and the 11 variables are listed in tables 4.85, 4.86 and 4.87.

Table 4.85: *Pearson Product Moment Correlations between AIC establishment querstions. (N=99)*

Variables	1	2	3
How long has your county had an established AIC?	-	.40*	.22*
How often does your counties' AIC meet?		-	.32*
How many other agencies have helped to establish your AIC?			-

$p < .05$

Table 4.86: *Pearson Product Moment Correlations between AIC establishment and stakeholder's received level of importance and need. (N=99)*

Variables	1	2	3	4	5	6	7
How long has you county had an established AIC?	-	.22*	.25*	.39*	.22*	.38*	.23*
Perceived level of importance by agri-science teachers		-	.43*	.28*	.14	.23*	.10
Perceived level of importance by agri-businesses			-	.47*	.45*	.49*	.22
Perceived level of importance by County Commissioners				-	.81*	.86*	.27*
Perceived level of need by County Commissioners					-	.68*	.38*
Perceived level of importance by County Judges						-	.34*
Perceived level of importance TDA.							-

*$p < .05$

Table 4.87: *Pearson Product Moment Correlations between AIC establishment and respondent's involvement. (N*=99)

Variables	1	2	3	4
How long has your county had an established AIC?	-	.28*	.27*	-.34*
Do your serve on your counties AIC?		-	.17	-.34*
Do you feel that Emergency Management information and education is vital and necessary?			-	-.10
Has having an AIC had a positive effect on local animal industry continuity?				-

* $p < .05$

The study also saw significant correlations between responses to the questions concerning the positive effect of having an AIC. Pearson Product Moment Correlations were analyzed between the questions of 1) Emergency Management/Preparedness Animal Issues information and education are vital and necessary at the local levels, 2) Emergency Management AIC's receive vital information and education from reputable sources, 3) Having an Emergency Management Animal Issues plan will aid recovery of local producers in the event of an animal disaster, 4) Having an Emergency Management AIC will help protect county animal industries continuity of business in the event of a local animal disaster, 5) Having a comprehensive Emergency Management Animal Issues plan in place will provide a real benefit during a local animal disaster, 6) Having an established Emergency Management AIC will benefit all sectors of animal agriculture in a county, 7) Emergency Management AIC's are well informed and 8) An Emergency Management Animal Issues plan will be a valuable tool to guide responses to an animal related event (Table 4.88)..

Table 4.88: *Pearson Product Moment Correlations Emergency Management/Preparedness Animal Issues information and education questions. (N=99)*

Variables	1	2	3	4	5	6	7	8
AI information is vital and necessary at the local levels	-	.62*	.64*	.63*	.60*	.59*	.55*	.62*
AIC's receive vital information from reputable sources		-	.49*	.46*	.51*	.48*	.53*	.54*
Having an AI plan will aid recovery of local producers in the event of an animal disaster			-	.86*	.81*	.80*	.41*	.74*
Having an AIC will help protect county animal industries continuity				-	.86*	.84*	.50*	.84*
Having a comprehensive AI plan in place will provide a real benefit during a local animal disaster					-	.86*	..48*	.86*
Having an established AIC will benefit all sectors of animal agriculture in a county						-	.52*	.78*
AIC's are well informed							-	.56*
An AI plan will be a valuable tool to guide responses to an animal related event								-

* $p < .05$

Significant correlations also existed between responses to collaborative effort with other agencies, especially with state and federal agencies. Pearson Product Moment Correlations were calculated with all questions concerning how often collaborations took place between the respondent and other agencies which included the Farm Services Agency, the Natural Resources and Conservation Service, the Texas Department of Agriculture, the Texas Animal Health Commission, Texas Parks and Wildlife Department, University Professors (Non-Extension), Fire Departments/EMS, Law Enforcement, the Texas Department of Transportation and the Texas Commission on Environmental Quality (Table 4.89)

Table 4.89: *Pearson Product Moment Correlations between collaborations with other agencies. (N*=99)

	1	2	3	4	5	6	7	8	9
FSA	-	.55*	.45*	.32*	.21	.29*	.01	.04	-.01
NRCS		-	.38*	.34*	.31*	.17	.10	.17	.05
TAHC			-	.55*	.41*	.50*	.17	.27	.20
TPWD				-	.41*	.48*	.17	.27	.23
UP(NE)					-	.31*	.24*	.15	.18
TXDOT						-	.26*	.18	.27*
FD/EMS							-	.61*	.48*
LE								-	.44*
TCEQ									-

* $p < .05$

Paired Questions Discrepancies

Mean weighted discrepancy scores (MWDS) were calculated to determine existing gaps between the "Key Stakeholders" sections and "Agency Stakeholder" sections to identify the gaps between perceived importance and perceived need. The larger the MWDS, the greater the gap was between perceived importance and perceived need by the stakeholders. Agri-science teachers had the greatest MWDS (.67) of the 27 key stakeholders and agencies while Texas AgriLife Extension Administrators had the lowest MWDS (-.09). Twenty of the agencies had positive MWDS scores, indicating gaps between perceived importance and perceived need. The other 7 stakeholders and agencies had no or negative MWDS indicating no gaps. The Texas Department of Agriculture, Texas Department of Transportation and Local Veterinarians had a MWDS of 0 (Table 4.90).

Table 4.90: *Ranking of key stakeholders and agencies mean weighted discrepancy scores for perceived importance and perceived need.*

Rank	Stakeholder/Agency	N	MWDS	SD
1	Agri-science teachers	79	.67	1.55
2	University Professors (Non-Extension)	74	.44	1.83
3	4-H Agents	56	.40	2.10
4	Department of Public Safety	73	.30	1.17
5	Bankers/lending agencies	75	.28	1.02
6	County Judges	81	.27	1.61
7	Local Commodity Groups	70	.23	1.36
8	County Commissioners	81	.23	1.53
9	Farm Services Agency	77	.23	1.31
10	Law Enforcement	76	.21	1.20
11	Natural Resources and Conservation	78	.18	1.16
12	Agri-businesses	76	.18	1.63
13	Professors	66	.17	1.40
14	County Sheriff	79	.16	1.23
15	County Fair Boards	76	.16	1.28
16	Ag/NR Agents	79	.14	1.32
17	Emergency Management Coordinators	79	.13	1.83
18	TX Commission on Environmental	69	.08	1.12
19	Fire Departments	77	.08	1.19
20	Local Producers	80	.07	1.64
21	TX Department of Agriculture	77	.00	1.84
22	TX Department of Transportation	73	.00	1.04
23	Local Veterinarians	73	.00	1.12
24	TX Animal Health Commission	79	-.05	0.95
25	Homeland Security	47	-.07	1.92
26	TX Parks and Wildlife Department	77	-.08	0.85
27	Extension Administration	79	-.09	1.05

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter contains a summary of the research conducted in this dissertation. It concludes with implications and recommendations for Extension in the establishment and management of local Emergency Management Animal Issues Committees. Suggestions are given for further research.

Summary

The purpose of this study was to determine what Texas AgriLife Extension Service Agriculture/Natural Resources (ANR) agents perceived as advantages and obstacles associated with the organization, facilitation and implementation of Emergency Preparedness Animal Issues education. The study sought the ANR agent's perceptions as to their role in the facilitation of the formation of county animal issues committees and the development of animal issues plans. The study also examined educational methodologies, strategies and collaborative efforts with other organizations for information dissemination. The results of this study will also aid other states and Extension Services in the development and implementation of their Emergency Preparedness Animal Issues education.

Four objectives were developed for this study and they were, 1) Determine the perceived advantages for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming for Emergency Preparedness, 2) Determine the perceived obstacles for Texas AgriLife Extension Service ANR agents in the organization and implementation of educational programming

for Emergency Preparedness Animal Issues, 3) Determine information dissemination methods or strategies which are perceived by Texas AgriLife Extension Service ANR agents as being the most effective and efficient, and 4) Determine the perceptions of Texas AgriLife Extension Service ANR agents for the best organizational strategies for collaborations with other agencies, groups or individuals to assist with the diffusion of Emergency Preparedness Animal Issues Awareness education.

Demographic Influence on Perceptions

All twelve Texas AgriLife Extension Service Districts were represented in the online questionnaire responses by participants in this study. This was a representation of the entire state of Texas. Of the respondents from the 12 districts, District 4 (16.1%), District 5 (13.1%), District 8 (11.1%), District 9 (8.0%) and District 10 (10.1%) made up 58.4% of the total respondents. These districts represent the East and South Texas AgriLife regions which were the regions that were directly and indirectly affected by hurricanes Katrina, Rita, Ike and Dolly.

Of the survey respondents, 58 (69.8%) were between the ages of 30 and 49 and 66 (78.3%) were agents that had 20 years or less years of service with Texas AgriLife Extension which indicated that over three fourths of the respondents were early to mid-career level agents.

Eighty-eight or 89.8% of the 99 respondents to the survey indicated that they did have an Emergency Management Animal Issues Committee (AIC) in their county. Of the 88 respondents that indicated they did have an established AIC, 46 or 47.9% indicated

their AIC met only once a year, while 40 or 41.7% of the respondents indicated their AIC met at least two times per year.

Pearson Product Moment Correlations were used to determine if there were significant relationships or causes and effects between demographics and the answers given to the different question sets concerning Emergency Management/Preparedness. There were significant relationships found between the Extension district the respondents were employed within and the responses to questions asking if they had been involved in an Emergency Management situation, if their clientele been involved in an Emergency Management situation, if they serve on their counties AIC and if they were involved in developing their counties Emergency Management plan.

These statistics indicate that the local AIC's in Texas counties are established and functioning committees as perceived by the Texas AgriLife Extension ANR agents responding to the survey. The research questionnaire demographical statistics also indicate that Texas AgriLife Extension ANR agents in districts that have been directly and indirectly affected by major hurricanes were more responsive to the survey.

Key Stakeholders Involvement

It was important for the study to determine the involvement of other agencies that were instrumental in assisting with the establishment of local AIC's and to determine if the involvement or non-involvement had an effect on the perceptions of the survey respondents.

Of the survey responses as to the involvement of other agencies in helping establish their AIC, only 1 respondent indicated they had no help from other agencies.

Fifty respondents or 50.5% indicated they had help from only 1 other agency or stakeholder. Thirty-five respondents or 35.4% indicated they had help from 2-4 other agencies in establishing their local AIC. Only 13 survey respondents or 13.1% indicated they had help from 5-8 other agencies in establishing their local AIC.

The questionnaire respondents were also asked to indicate all of the agencies that helped in the establishment of their AIC. Of the possible choices given on the survey, the top five frequencies were, 1) Local Government (53.5%), 2) Other (43.4%), 3) Texas Animal Health Commission (39.4%), 4) Fire Departments/EMS (22.2%) and 5) Law Enforcement (20.2%). The percentage totals add up to more than 100% because the respondents could mark all of the agencies that applied to the question.

The results from questions concerning the involvement of other agencies in the establishment of a local AIC indicated that they had very little help from other agencies in the establishment of them. Of the agencies contributing to the establishment, the respondent's local government or county officials and the Texas Animal Health Commission were the agencies that were perceived as giving the most help in AIC establishment.

The questionnaire results also indicated that the perceptions of the respondents as to the short and long range rank by County Extension Leadership Advisory Boards (LAB's) was not very high on the list of critical issues affecting their respective counties. Seventy-five percent indicated their LAB's did not rank or ranked the issue very low on both the short and/or long range priority critical issues list for their respective counties. Of the 25% that answered yes to the questions concerning LAB's, they were given the

opportunity to respond as to why. Many of the responses indicated that their LAB had the issued ranked very high on their counties' critical issues list because they had experienced a disaster in their respective county.

From the demographic data and the data from involvement from other agencies, we can conclude that Texas AgriLife Extension ANR agents perceived that being employed in an Extension district that had been directly or indirectly involved in a natural disaster and having involvement by other agencies was a definite advantage for them in the establishment and management of a successful AIC. Key stakeholder and agency involvement from important local and state agencies (Local Government and the Texas Animal Health Commission) was perceived as a definite positive contributing factor in determining how successful the establishment and management of local AIC's were in the state by the survey respondents.

Not having the county Extension LAB identify Emergency Management Animal Issues as a critical issue for either short or long term programming by Extension was perceived as a definite obstacle or disadvantage to Texas AgriLife Extension.

Emergency Management AIC Needs Assessment

The Texas AgriLife Extension ANR agents responding to the questionnaire indicated in the needs assessment double matrix questions sets that the level of importance compared to the level of need perceived by the listed stakeholders was low to moderate except for the agriculture/natural resources agents themselves and the county stakeholders including the County Commissioners, County Judges and County Emergency Management Coordinators. It was interesting to see that 32% and 33%

respectively of the respondents indicated that the Department of Homeland Security's level of perceived importance and need was not applicable which indicates that 1/3 of the respondents do not have a Department of Homeland Security in their county.

The responses to the needs assessment concerning the perceptions of the level of importance and need by other agencies indicated that the Texas AgriLife Extension ANR agents responded that they perceived that the level of importance and need as seen by Texas AgriLife Extension Administrators and Specialists was very high. The perception for the level of importance and need by the Texas Animal Health Commission and Texas Department of Agriculture was also very high for both. The agents also indicated that the other state and federal agencies listed on the survey had a low to moderate perceived level of importance and need for Emergency Management AIC's.

The mean weighted discrepancy scores (MWDS) indicated that there were gaps in the perceived level of importance and need with the largest gap being between importance and need level of agri-science teachers and the smallest gap being between the level of importance and need by Extension Administrators. Either no gap or a negative gap existed between all the key stakeholders or agencies that the respondents felt were instrumental in supervision or assistance in organization, facilitating, planning, or implementing Emergency Management/Preparedness AIC and Animal Issues (AI) plan development and management. It is important to note also that there was no or 0 gap for the Texas Department of Agriculture, Texas Department of Transportation and Local Veterinarians.

From the questionnaire responses by the Texas AgriLife Extension ANR agents, the study concluded that the agents saw the need and importance level placed on Emergency Management and the establishment and management of local AIC's by the Texas AgriLife Extension Service Administrators at both the state, regional and district levels and also the level of importance and need placed on Emergency Management AIC's by their local government consisting of the County Commissioners and Judges.

Emergency Management/Preparedness Educational Efforts

The study also had questions pertaining to the involvement by Texas AgriLife Extension Service agents in their respective counties. The survey results indicated that 83% of the Emergency Management/Preparedness education was perceived by the respondents as being conducted by the ANR agent in the county. The respondents perceived that Family and Consumer Sciences agents conducted 43% of the Emergency Management/Preparedness education, 57% was perceived conducted by 4-H agents, 6% by horticulture agents and 63% by all other office staff. The respondents had the opportunity to check all that applied as to their perceptions of all Extension office employees involved in their counties in Emergency Management/Preparedness educational efforts. It should be noted that not all counties responding have all of the office staff that were indicated as choices for answering the question. Many counties do not have either a 4-H or horticulture agent and that is the reason for the lower percentages for these agents in the survey. Another question also asked respondents if their co-workers played an active role in Emergency Management/Preparedness education and 70% responded yes.

These results indicated that the entire Extension office staffs are involved in Emergency Management/Preparedness education for counties in Texas. The majority of the educational efforts may come from the ANR agents, but in some way, the other office staff members (agents and support staff) are also involved in the educational efforts to some degree.

Direct Agent Involvement

The Texas AgriLife Extension ANR agents responding to the questionnaire were asked if they played an active role in the establishment of their local AIC. Eighty-five percent responded yes, they did play and active role. Eighty-five percent also replied that they currently serve on their local AIC and 82% indicated they were involved in the development of their counties local Animal Issues Plan.

Forty-one percent of the respondents indicated they had been involved in an Emergency Management situation and 29% said they had been involved in an animal disaster. The respondents indicated that 48% of their clientele had been involved in an Emergency Management situation and 24% of their clientele had been involved in an animal disaster.

Seventy percent of the respondents indicated they thought it was to Extension's advantage to have a role in Emergency Management AIC"s, but 58% said that they had and have experienced obstacles with the establishment and management of their local AIC. For those responding yes to having experienced obstacles, the open ended responses as to why indicated that in most every case this was due to their local governments

(County, State and Federal) and/or clientele not fully supporting the effort to create the committee and develop a local Emergency Management Animal Issues Plan.

The results indicated that the ANR agents that responded to the study questionnaire have had and continue to play an active role in their counties local AIC and many have had to assist, along with their clientele, in the implementation of their counties AI plan because of an Emergency Management situation that involved animals. The process, however, has not been easy for all. Many have experienced obstacles in trying to facilitate and implement the formation of a local committee and to motivate interest in managing a functioning AIC once established. The most common obstacle was trying to convince local stakeholders (local government, businesses, and producers) how important it is to have an AIC and AI plan in place. Those agents that have personally been involved in an Emergency Management Animal Disaster situation along with their clientele know how important a functioning AIC can be, but those that have not had the experience do not.

Value of an Animal Issues Plan

Texas AgriLife Extension ANR agents understand the value of an AIC plan as indicated by 94% either agreeing or strongly agreeing that the information an education of Emergency Management Animal Issues are vital and necessary. Eighty-five percent of the agents either agreed or strongly agreed that an AI plan will aid in the recovery in the event of an animal disaster and 84% agreed or strongly agreed that an AI plan will help protect animal industries continuity in the event of an animal disaster. Eighty-six percent of the agents also agreed or strongly agreed that having an AI plan is a valuable tool to

guide responses to an animal related event. The questionnaire results indicate that even the agents that have not been directly or indirectly involved in an Emergency Management situation understand the value of having an AIC and having an AI plan in place.

Conclusions

The diffusion of the innovation of Emergency Management/Preparedness education for animal related issues has been and will continue to be crucial to the 254 counties in the state of Texas. Texas AgriLife Extension agents, especially ANR agents, have been and will continue to be very important instruments utilized for the organization, implementation, evaluation, and interpretation of Emergency Management/Preparedness AIC's, the development of AI plans and educational programs to diffuse this vital information. The attitudes and perceptions of these educators in the overall programming efforts have been and will continue to be extremely important for the adoption and further dissemination to all clientele.

This research study indicates that Texas AgriLife Extension ANR agents understand how important the diffusion of this vital information is and will continue to be. They understand the importance that is placed on this issue by Extension Administrators, Extension Specialists, their local county governments, the state governmental agencies, and federal agencies with involvement in the area of Emergency Management.

The state of Texas has experienced many natural disasters over the past five years including devastating hurricanes, tornados, floods, wildfires and drought. The state has also experienced animal disease outbreaks, during this period, which included bovine

tuberculosis, fever ticks, West Nile virus, Vesicular Stomatitis and others. Texas AgriLife Extension ANR agents involved with these events, along with their clientele and stakeholders, have had an easier time of establishing and/or managing their local Emergency Management AIC's and the continued educational efforts through program planning. Regions, districts, counties, agents and their clientele that have not been affected by some sort of disaster, be it animal related or not, have had increased difficulty of convincing key stakeholders of the importance and need of education and formation of committees in this area and the eventual development of a plan of action.

Texas AgriLife Extension ANR agents have done an excellent job of planning, organizing, facilitating and implementing educational programming in the area of Emergency Preparedness and Management with the assistance of volunteers, program area committee members, LAB's and collaborations with other agencies, but these efforts are very difficult if these stakeholders do not accept and understand the importance of these efforts to provide information and education. From this study, it is apparent that this has been both the advantage and the obstacle for Texas AgriLife Extension ANR agents in the state of Texas. The work load for most of these agents is tremendous and the success or failure of this educational programming depends upon help or assistance that is provided by the key stakeholders in their respective counties.

Recommendations

The recommendation from this study is that further research needs to be conducted in the area of Emergency Management/Preparedness education. The response rate to this study was relatively low with 99 out of 247 responding to the questionnaire

which indicates that further research needs to be conducted concerning the non-respondents as to the reasons for not responding. Further research also needs to be conducted to correlate districts with responses and response rate.

The state of Texas and Texas AgriLife Extension has done an excellent job of diffusing education in this area and also in facilitating the establishment of local Emergency Management AIC's and assisting in the development of local Animal Issues plans. Texas, however is not finished in this ongoing process. Many counties within the state have strong functioning AIC's that have developed and implemented very functional AI plans, but there are still many counties that are in the beginning process of organizing a local AIC. The ANR agents in these counties might consider utilizing the agencies and stakeholders indicated in the study where no gap existed between the level of perceived importance and need. Local veterinarians were indicated as one of these stakeholders and they could play an important role in helping with the function of local AIC's.

From the results of this study, it is also recommended that the educational training protocol with specific curriculum developed and pilot tested in 7 states in 2009 by the National Extension Disaster Emergency Network (EDEN) by a committee called "Securing Community Agro-security Planning" (S-CAP), will continue to be utilized for local counties within states that will help them work through the process of developing an AIC and AI plan. This will ensure a timely and effective response to a local, state or national animal related disaster. From this, states may also choose to implement regional Extension Agriculture Emergency Management Specialists to assist county ANR agents

with educational efforts regarding Emergency Management/Preparedness for agriculture and to help them manage or assist in managing their local AIC and AI plan to ensure that it will be able to function properly in the case of a disaster involving animals.

REFERENCES

Alexander, D., (2002). *Principles of Emergency Planning and Management*. Harpended: Terra publishing. ISBN ISBN 1-903544-10-6

Animal Issues Committees Guidance Document, (2009). Retrieved, 12/29/09 from www.tahc.state.tx.us/emergency/Animal_Issues_Committees

Astroth, K. A. (1990). Information technology: Extension's future. *Journal of Extension*, 28, (1).

Bankoff, G,. Frerks, G., Hilhorst, D., (*eds.*) (2003). *Mapping Vulnerability: Disasters, Development and People*. ISBN ISBN 1-85383-964-7

Berg, R., (2009). "Hurricane Ike Tropical Cyclone Report" (PDF). NHC. Retrieved, 12/29/09 from http://www.nhc.noaa.gov/pdf/TCR-AL092008_Ike.pdf.

Bosch, K. (2004). Cooperative Extension responding to family needs in time of drought and water shortage. *Journal of Extension*, 42, (4).

California Department of Forestry and Fire Protection. Accessed, 12/29/09. http://www.fire.ca.gov/.

Campbell, J. R. (1995). *Reclaiming a lost heritage.* Ames. Iowa: Iowa State University Press.

Canadian Food Inspection Agency, (2009). Retrieved, 12/29/09 from http://www.inspection.gc.ca/english/toce.shtml

Cartwright, S., Case, P., Gallagher, T., & Hathaway, R. (2002). Extension's role in responding to community crisis: Lessons from Klamath Falls, Oregon. *Journal of Extension*, 40, (6).

Cartmell, D., Orr, C., & Keleman, D. (2006). Effectively disseminating information to limited-scale landowners in the urban/rural interface. *Journal of Extension*, 44, (1).

Centers for Disease Control and Prevention, (2009). Assessed 12/29/09 from http://www.cdc.gov/

Department of Homeland Security, Purpose and Mission, (2009). Retrieved, 12/29/09 from http://www.dhs.gov/xabout/

DiSavino, Scott, (2008). Energy market eyes Tropical Storm Ike in Atlantic. Reuters UK. Archived from the original on 2008-09-03. Retrieved, 12/29/10 from http://www.webcitation.org/5aYlr5w2V.

Ekanem, E., Singh, S., Tegegne, F., & Akuley-Amenyenu, A. (2001). Differences in district Extension leaders' perceptions of the problems and needs of Tennessee small farmers. *Journal of Extension*, 39, (4).

Extension Disaster Emergency Network, (2009). Retrieved, 03/23/2010 from http://eden.lsu.edu/EDENCourses/AnimalAgrosecurity/Pages/default.aspx

Federal Emergency Management Agency, (2010). Retrieved, 03/16/10 from http://www.fema.gov/about/index.shtm

Faries, F., & Dement, A. I., (2005). *Foreign and emerging animal diseases handbook: Train-the-trainers curriculum for educators.* Texas AgriLife Extension Service, B-6204.

Fraenkel J. R. & Wallen N. E., (2006). *How to design and evaluate research in education: Causal-comparative research.* McGraw-Hill.

Graves, W. (2007). *Wolves in Russia: Anxiety throughout the ages*. pp. 222. ISBN 1550593323

Hamilton AV, & Hardy AV (1950). The brucellosis ring test: its potential value in the control of brucellosis(PDF). *Am J Public Health Nations Health* 40 (3): 321–3. PMID 15405523. PMC 1528431. http://www.ajph.org/cgi/reprint/40/3/321.pdf.

Hurricane Recovery Network, (2009). Overcoming Ike. Retrieved, 12/29.09 from http://www.houstonhurricanerecovery.org/

Knabb, R. D., Brown, D. P., Rhome, J. R., (2007). "NHC Rita Report". Retrieved, 12/29/09 from http://www.nhc.noaa.gov/pdf/TCR-AL182005_Rita.pdf.

Leadership Advisory Boards, (2010). Retrieved, 03/16/2010 from http://texasvolunteer.tamu.edu/LABmaterial.htm

Leland Tribune, (2008). Leland under hurricane watch as Hanna takes aim at N.C. Coast. Retrieved, 12/29/09.

Los Angeles Times, (2009). California Wildfires Burn More Than 336,000 Acres. Retrieved, 12/29/09. http://www.latimes.com

Martinez-Salas E, Saiz M, Sobrino F (2008). "*Foot-and-Mouth Disease Virus*". *Animal Viruses: Molecular Biology*. Caister Academic Press. pp. 1–38. ISBN 978-1-904455-22-6

National Climatic Data Center (U.S. Department of Commerce), (2009). Retrieved, 12/29/09 from http://www.ncdc.noaa.gov/oa/ncdc.html

National Hurricane Center (2007). November 2005 Atlantic Tropical Weather Summary. Retrieved, 12/29/09 from http://www.nhc.noaa.gov/archive/2005/tws/MIATWSAT_nov_final.shtml

National Incident Command System, (2010). Retrieved, 03/16/2010 from http://www.nimsonline.com/?s=Emergency+Preparedness+definition

National Strategy for Homeland Security, (2002). Retrieved 12/29/09 from http://www.dhs.gov/index.shtm

Natural Resources and Conservation Service, Purpose and Mission, (2009). Retrieved, 12/29/10 from http://www.nrcs.usda.gov/about/

Orr, C. L. (2003). Informational needs of limited-scale landowners within the urban/rural interface of Lincoln County, Oklahoma, unpublished masters thesis, Oklahoma State University.

Polson, J., & Gastier, T. (2001). Small farm/new farm: One agent meets other agents' needs for research-based information through the WWW. *Journal of Extension*, 39, (4).

Pounds, D. (1985). Putting Extension information where people will find it. *Journal of Extension*, 23, (4).

Reportable Diseases, (2007). *Accredited Veterinarian's Manual*. Canadian Food Inspection Agency. Retrieved, 12/29/09 from http://www.inspection.gc.ca/english/anima/heasan/man/avmmva/avmmva_mod8e.shtml.

Reuters, (2008). Storm Ike, 9th of season, forms in Atlantic. Retrieved, 12/29/09 from http://www.reuters.com/article/domesticNews/idUSN0133014420080901.

Richardson, J. G. (1995). *An assessment of clientele preferences for receiving Extension information.* Raleigh, N.C.: North Carolina State University. (Eric Document Reproduction Service No. ED356358).

Rogers, E. M. (2003). *Diffusion of innovation*. New York: Free Press.

Texas AgriLife Extension Service, (2009). Retrieved, 12/29/09 from (http://texasextension.tamu.edu/about/index.php)

Texas Animal Health Commission, Purpose and Mission, (2009). Retrieved, 12/29/09 from http://www.tahc.state.tx.us/agency/

Texas Commission on Environmental Quality, Purpose and Mission, (2009). Retrieved 12/29/10 from http://www.tceq.state.tx.us/about

Texas Department of Agriculture, Purpose and Mission, (2009). Retrieved, 12/29/09 from http://www.agr.state.tx.us/agr/main

Texas Department of Public Safety, Purpose and Mission, (2009). Retrieved, 12/29/09 from http://www.txdps.state.tx.us/mission

United States Department of Agriculture, Animal and Plant Health Inspection Service, (2010). Retrieved, 01/04/10 from http://www.aphis.usda.gov/

Vermont Beef Producers (PDF) (2009). *How important is calfhood vaccination?* Retrieved, 12/29/09 from http://www.vermontbeefproducers.org/NewFiles/AsktheVet/Fall%2002.pdf.

Weather Encyclopedia, The Weather Channel, (2009). Retrieved, 12/29/09 from http://www.theweatherchannelkids.com.

Wisner, B. Blaikie, P., Cannon, T., and Davis, I., (2004). *At Risk - Natural hazards, people's vulnerability and disasters*. Wiltshire: Routledge. ISBN ISBN 0-415-25216-4

APPENDIX A

ADMINISTRATION LETTER

Rick Maxwell, County Extension Agent-Agriculture and Natural Resources in Collin County will be sending a survey instrument to certain County Extension Agents related to ***The Effectiveness of Emergency Preparedness Animal Issues Education: Perceived Advantages and Obstacles of Roles Played by Texas AgriLife Extension Service Agents*** as part of his research to complete his Doctoral Degree. This study directly correlates with Extension's efforts in emergency preparedness and will serve to assist the agency in refining our approach to emergency preparedness.

If you are contacted by Rick, I would ask that you assist him by completing this survey. This information will be extremely beneficial to the agency and will help direct future emergency preparedness efforts.

Thank you in advance for your assistance concerning this matter.

APPENDIX B

RESEARCH SURVEY INVITATION 1

Dear Texas AgriLife Extension Agent (Agriculture/Natural Resources),

This survey questionnaire is being used to collect data for the research dissertation topic "The Effectiveness of the Diffusion of Emergency Preparedness Animal Issues Education". Thank you for taking time to answer this questionnaire concerning Emergency Preparedness Animal Issues education. The research aims to identify the perceptions of agricultural Extension agents in Texas as to their role in the development and implementation of animal issues committees and their perceptions of the role of Extension in the development and dissemination of Emergency Preparedness Animal Issues education.

The questionnaire therefore asks general questions regarding the involvement of agricultural Extension agents in the development, implementation, and dissemination of Emergency Preparedness Animal Issues.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the questionnaire at any point or skip questions if needed. It is very important to learn of your opinions concerning this topic.

Your responses will be strictly confidential and data from this research will be reported anonymously. If you have questions at any time about the questionnaire, please contact me (Rick Maxwell) by phone at (972) 548-4233 or email at r-maxwell@tamu.edu.

Thank you very much for your time and support. Please start the survey at your convenience; it should take approximately 20 minutes.

Sincerely,

Rick Maxwell
CEA-Ag/NR
Collin County

APPENDIX C

RESEARCH SURVEY INVITATION 2

Dear Texas AgriLife Extension Agents (Agriculture/Natural Resources),

Last week you received an email invitation to participate in a questionnaire survey being used to collect data for the research dissertation topic "The Effectiveness of the Diffusion of Emergency Preparedness Animal Issues Education". The research aims to identify the perceptions of agricultural Extension agents in Texas as to their role in the development and implementation of animal issues committees and their perceptions of the role of Extension in the development and dissemination of Emergency Preparedness Animal Issues education.

The questionnaire therefore asks general questions regarding the involvement of agricultural Extension agents in the development, implementation, and dissemination of Emergency Preparedness Animal Issues.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the questionnaire at any point or skip questions if needed. It is very important to learn of your opinions concerning this topic.

Your responses will be strictly confidential and data from this research will be reported anonymously. If you have questions at any time about the questionnaire, please contact me (Rick Maxwell) by phone at (972) 548-4233 or email at r-maxwell@tamu.edu.

If you did not have time to complete the survey last week, the survey is still live and I hope you will be able to respond to the survey this week.

Thank you very much for your time and support. Please start the survey at your convenience; it should take approximately 20 minutes.

Sincerely,

Rick Maxwell
CEA-Ag/NR
Collin County

APPENDIX D

RESEARCH SURVEY INVITATION 3

Dear Texas AgriLife Extension Agent (Agriculture/Natural Resources),

This is the third email invitation to participate in a questionnaire survey being used to collect data for the research dissertation topic "The Effectiveness of the Diffusion of Emergency Preparedness Animal Issues Education". The research aims to identify the perceptions of agricultural Extension agents in Texas as to their role in the development and implementation of animal issues committees and their perceptions of the role of Extension in the development and dissemination of Emergency Preparedness Animal Issues education.

The questionnaire therefore asks general questions regarding the involvement of agricultural Extension agents in the development, implementation, and dissemination of Emergency Preparedness Animal Issues.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the questionnaire at any point or skip questions if needed. It is very important to learn of your opinions concerning this topic.

Your responses will be strictly confidential and data from this research will be reported anonymously. If you have questions at any time about the questionnaire, please contact me (Rick Maxwell) by phone at (972) 548-4233 or email at r-maxwell@tamu.edu.

If you did not have time to complete the survey last week, the survey is still live and I hope you will be able to respond to the survey this week.

Thank you very much for your time and support. Please start the survey at your convenience; it should take approximately 20 minutes.

Sincerely,

Rick Maxwell
CEA-Ag/NR
Collin County

APPENDIX E

RESEARCH SURVEY 4TH AND FINAL INVITATION

Dear Texas AgriLife Extension Agent (Agriculture/Natural Resources),

This is the 4th and final invitation to participate in a questionnaire survey being used to collect data for the research dissertation topic "The Effectiveness of the Diffusion of Emergency Preparedness Animal Issues Education". The research aims to identify the perceptions of agricultural Extension agents in Texas as to their role in the development and implementation of animal issues committees and their perceptions of the role of Extension in the development and dissemination of Emergency Preparedness Animal Issues education.

The questionnaire therefore asks general questions regarding the involvement of agricultural Extension agents in the development, implementation, and dissemination of Emergency Preparedness Animal Issues.

Your participation in this study is completely voluntary and there are no foreseeable risks associated with it. However, if you feel uncomfortable answering any questions, you can withdraw from the questionnaire at any point or skip questions if needed. It is very important to learn of your opinions concerning this topic.

Your responses will be strictly confidential and data from this research will be reported anonymously. If you have questions at any time about the questionnaire, please contact me (Rick Maxwell) by phone at (972) 548-4233 or email at r-maxwell@tamu.edu.

If you did not have time to complete the survey last week, the survey is will remain live through Friday of this week. Please take the time to respond to the survey this final week if at all possible. Please start the survey at your convenience; it should take approximately 20 minutes.

Thank you very much to all that have responded to the survey for your time and support.

Sincerely,

Rick Maxwell
CEA-Ag/NR
Collin County

APPENDIX F

RESEARCH SURVEY QUESTIONNAIRE

AgriLIFE EXTENSION
Texas A&M System
Improving Lives. Improving Texas.

1.What is your District?

2. How long has your county had an established local Emergency Management Animal Issues Committee?

- ○ Do not have one
- ○ Less than 1 year
- ○ 1 year
- ○ 2 years
- ○ More than 2 years

3. How often does your county's Emergency Management Animal Issues Committee meet?

- ○ Do not have one
- ○ Once a year
- ○ Twice a year
- ○ Three times a year
- ○ More than 3 times a year

4. **Which of the organizations listed below actively contribute to the writing of your county's Emergency Management Animal Issues Plan?**

☐	Do not have one	☐	University Professors (Non-Extension)
☐	FSA	☐	Fire Departments/ EMS
☐	NRCS	☐	Law Enforcement
☐	TDA	☐	TXDOT
☐	TAHC	☐	TCEQ
☐	Homeland Security	☐	Local government (Commissioner's Court)
☐	TPWD	☐	Other _____

5. Does your Leadership Advisory Board identify/evaluate Emergency Management in its list of LONG TERM (more than 3 years) priorities for program planning?

No
Yes

If YES, where does it rank?

6. Does your Leadership Advisory Board identify/evaluate Emergency Management in its list of SHORT TERM (less than 3 years) priorities for program planning?

No
Yes

If YES, where does it rank?

7. **Mark the column** that most closely matches the **LEVEL OF IMPORTANCE** each **county stakeholder** places on having an Emergency Management Animal Issues Committee in the **LEFT-HAND column.**

Mark the column that most closely matches **LEVEL OF NEED** each **county stakeholder** places on having an Emergency Management Animal Issues Committee in the **RIGHT-HAND column**.

Perceived Importance

NI = No Importance
LI = Low Importance
MI = Moderate Importance
HI = High Importance

Perceived Need

1 = No Need
2 = Low Need
3 = Moderate Need
4 = High Need
NA – Not Applicable

Perceived Importance				Key Stakeholders	Perceived Need				
NI	LI	MI	HI		NN	LN	MN	HN	NA
				Ag. Science Teacher					
				Agri Businesses					
				CEA – Ag/NR					
				CEA – 4-H					
				Commercial livestock and poultry producers					
				Commissioner's					
				County Judge					
				County Sheriff					
				Department of Public Safety					
				Emergency Management Coordinator					
				Fair Board					
				Fire Departments/ EMS					
				Homeland Security (Local)					
				Local Banker					
				Local Commodity Groups					
				Local Veterinarian					
				Non-commercial/hobby livestock and poultry producers					

8. **Mark the column** that most closely matches the **LEVEL OF IMPORTANCE** each **State stakeholder** places on having an Emergency Management Animal Issues Committee in the **LEFT-HAND column.**

   Mark the column that most closely matches **LEVEL OF NEED** each **State stakeholder** places on having an Emergency Management Animal Issues Committee in the **RIGHT-HAND column**.

Perceived Importance

NI = No Importance
LI = Low Importance
MI = Moderate Importance
HI = High Importance

Perceived Need

1 = No Need
2 = Low Need
3 = Moderate Need
4 = High Need
NA – Not Applicable

Perceived Importance				Agency Stakeholders	Perceived Need				
NI	LI	MI	HI		NN	LN	MN	HN	NA
				Farm Services Agency					
				Natural Resources Conservation Services					
				Texas AgriLife Extension Service Administration					
				Texas AgriLife Extension Service Specialists					
				Texas Department of Agriculture					
				Texas Animal Health Commission					
				Texas Parks and Wildlife Department					
				University Professors (Non-Extension)					
				Fire Departments/ EMS					
				Law Enforcement					
				Texas Department of Transportation					
				Texas Commission on Environmental Quality					

9. **What types of Emergency Preparedness educational programming is conducted in your county?**(Check All that Apply)

- ☐ Ag. Natural Resource
- ☐ Family and Consumer Science
- ☐ 4-H
- ☐ Horticulture
- ☐ Office Staff
- ☐ Other, Please Explain .

10. Emergency Preparedness Involvement	YES	NO
Have you been involved in an emergency management situation?		
Have you or will you have an active role in the establishment of the committee?		
If your county has an Emergency Management Animal Issues Committee, do you serve on that committee?		
Do any of your co-workers play an active role in Emergency Preparedness Education?		
Have your clientele been involved in an emergency management situation?		
Have you been involved in an animal disaster?		
Are you involved in your county's Emergency Management Animal Issues Plan for disasters and emergencies?		
Are you part of your county's Emergency Management Animal Issues Committee?		
Have your clientele been involved in an animal disaster?		

SD = Strongly Disagree D = Disagree A = Agree SA = Strongly Agree

11. Value of Animal Issues Plans and Committees	SD	D	A	SA
Emergency Preparedness Animal Issues information and education is vital and necessary at local levels.				
Emergency Management Animal Issues Committees receive vital information and education from reputable sources.				
Having an Emergency Management Animal Issues Plan will aid recovery of local producers in the event of an animal disaster.				
Having an Emergency Management Animal Issues Committee will help protect county animal industry continuity of business in the event of a local animal disaster.				
Having a comprehensive Emergency Management Animal Issues Plan in place will not provide any real benefit during a local animal disaster.				
Having an established Emergency Management Animal Issues Committee will not provide any real benefit to the local animal industry.				
A county Emergency Management Animal Issues Committee will benefit all sectors of animal agriculture in a county.				
Emergency Management Animal Issues Committees are not well informed.				
An Emergency Management Animal Issues Plan will be a valuable tool to guide responses to an animal-related event.				

12. How often do you collaborate with the following agencies?

N = Never S = Sometimes F = Frequently A = Always				
Agencies	**N**	**S**	**F**	**A**
Farm Services Agency				
Natural Resources Conservation Services				
Texas Department of Agriculture				
Texas Animal Health Commission				
Texas Parks and Wildlife Department				
University Professors (Non-Extension)				
Fire Departments/ EMS				
Law Enforcement				
Texas Department of Transportation				
Texas Commission on Environmental Quality				

13. Do you believe it is to Extension's advantage to give leadership to creating Emergency Management Animal Issues Committees? ○ No ○ Yes	**Why or Why not?**
14. Have you experienced obstacles in creating an Emergency Management Animal Issues Committee in your county? ○ No ○ Yes	**If yes, what were some of these obstacles?**
15. Has having an Emergency Management Animal Issues Committee in your county had a POSTIVE effect on local animal industry? ○ No ○ Yes Do not have one	**Please explain?**

DEMOGRAPHICS

16. What population range does your county fall within?

- ◯ Less than 50,000
- ◯ 50,001 – 100,000
- ◯ 100,001 – 250,000
- ◯ 250,001– 500,000
- ◯ More than 500,000

17. What is the estimated cash receipt value of animal agriculture in your county? (From Annual Increment Report)

18. What is the estimated cash receipt value of all non-animal agriculture in your county? (From Annual Increment Report)

19. How many years have been employed in Extension?

- ◯ 0 - 5
- ◯ 6 - 10
- ◯ 11 - 15
- ◯ 16 - 20
- ◯ 21 - 25
- ◯ 26 or more years

20. You are…

- ◯ Male
- ◯ Female

21. What is your primary degree field?

- ◯ Agricultural Education
- ◯ Agricultural Economics
- ◯ Agricultural Engineering
- ◯ Agronomy
- ◯ Animal Science
- ◯ Forestry
- ◯ Horticulture
- ◯ Range Science
- ◯ Wildlife
- ◯ Other, Please specify

22. What is your age group?

- ◯ 20 - 29
- ◯ 30 - 39
- ◯ 40 - 49
- ◯ 50 - 59
- ◯ Over 60

23. Which of the following best describes your ethnicity?

- ◯ African American
- ◯ Hispanic American
- ◯ Multi-racial
- ◯ Native American
- ◯ White/Caucasian
- ◯ Other, Please specify

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24. COMMENTS:

Thank You for Your Participation

Texas AgriLife Extension Service

APPENDIX G

RESEARCH IRB APPROVAL LETTER

TEXAS TECH UNIVERSITY
Research Services

September 10, 2009

Dr. Steve Fraze Ag Ed &
CommunicationsMail Stop:
2131

Regarding: 501998 The Effectiveness of the Diffusion of Emergency Preparedness Animal IssuesEducation: Perceived Advantages and Obstacles of Texas AgriLife Extension ServiceAgriculture/Natural Resources Agents Role

Dr. Steve Fraze:

The Texas Tech University Protection of Human Subjects Committee approved your claim for anexemption for the proposal referenced above on September 9, 2009.

Exempt research is not subject to continuing review. However, any modifications that (a) changethe research in a substantial way, (b) might change the basis for exemption, or (c) might introduceany additional risk to subjects must be reported to the IRB before they are implemented.

To report such changes, you must send a new claim for exemption or a proposal for expedited orfull board review to the IRB. Extension of exempt status for exempt projects that have notchanged is automatic.

The IRB will send annual reminders that ask you to update the status of your research project.Once you have completed your research, you must inform the Coordinator of the Committee eitherby responding to the annual reminder or by notifying the Coordinator by memo or e-mail(donna.peters@ttu.edu) so that the file for your project can be closed.

Sincerely,

Rosemary Cogan

Rosemary Cogan, Ph.D., ABPPProtection
of Human Subjects Committee